

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

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UNITED STATES, et al., : Civil Action No.:
: 1:23-cv-108
Plaintiffs, :
versus : Friday, September 20, 2024
: Alexandria, Virginia
GOOGLE LLC, : Day 10 a.m.
: Pages 1-153
Defendant. :
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The above-entitled bench trial was heard before the
Honorable Leonie M. Brinkema, United States District Judge.
This proceeding commenced at 9:04 a.m.

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COMPUTERIZED TRANSCRIPTION OF STENOGRAPHIC NOTES

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P R O C E E D I N G S

THE DEPUTY CLERK: Civil action
Number 1:23-cv-108, United States of America, et al. versus
Google LLC.

Will counsel please note their appearance for the
record, first for the plaintiffs.

MR. HENRY: Good morning, Your Honor. Ty Henry
from the Virginia Attorney General's Office on behalf of the
plaintiff states.

MS. WOOD: Good morning, Your Honor. Julia Tarver
Wood from the Department of Justice for the United States.
With me are my colleagues, Aaron Teitelbaum, Brent Nakamura,
Michael Wolin and Alvin Chu, and Mr. Mene from the U.S.
Attorney's Office.

THE COURT: Good morning.

MS. DUNN: Good morning, Your Honor. Karen Dunn
for Google. And with me today is Bill Isaacson, Erica
Spevak, Craig Reilly, Jeannie Rhee and Matt Spalding.

THE COURT: And I have to commend the tech people.
Both of you have been phenomenal in getting us immediate
images. And at some point we'll get your names officially
on the record, but I want to just tell you right now, you've
been going a great job, so we appreciate it.

MR. KLEIN: Thank you, Your Honor.

THE COURT: Mr. Isaacson, you're on first. This

1 is cross-examination of Professor Lee.

2 MR. ISAACSON: Thank you, Your Honor.

3 CROSS-EXAMINATION

4 BY MR. ISAACSON:

5 Q Professor Lee, it's Bill Isaacson. I guess we're
6 handing out some binders first.

7 Professor Lee, you defined an ad stack as
8 generally consisting of a publisher ad server, ad exchanges
9 and advertiser bidding tools, including demand-side
10 platforms and advertiser ad networks; correct?

11 A Yes.

12 Q And you agree that header bidding has increased
13 competition in the ad tech stack?

14 A Within particular product markets, header bidding has
15 increased competition.

16 Q You have concluded from your work in this case that
17 Google believed that header bidding threatened what you said
18 was Google's market power in the ad tech stack; correct?

19 A Again, header bidding threatened Google's market power
20 in certain relevant product markets.

21 Q Well, you've said that Google perceived header bidding
22 as an existential threat to its market power in the ad tech
23 stack; correct?

24 A Yes.

25 Q And you have concluded that Google perceived header

1 bidding as providing existing competitors or new entrants
2 the potential ability to compete more effectively in the
3 publisher ad server market; correct?

4 A Yes.

5 Q Okay. And you believe that Google recognized that both
6 ad exchanges and advertiser ad networks working with header
7 bidding tools could grow into potential competitors to DFP?

8 A Either they could grow themselves or facilitate the
9 entry of another publisher ad server.

10 Q And you've also concluded that Google recognized that
11 ad exchanges and advertiser ad networks working with header
12 bidding tools could facilitate other potential competitors
13 to DFP other than ad exchanges and advertiser ad networks?

14 A Yes.

15 Q And it's your opinion that header bidding threatened
16 what you've called Google's strategy of locking up access to
17 publisher inventory through DFP?

18 A Yes.

19 Q And if, indeed, header bidding did undue that Google
20 strategy, that would start a cycle of network effects in
21 which alternatives to Google's ad tech products became more
22 attractive?

23 A Can you repeat that, please?

24 Q Sure.

25 If header bidding did undermine what you call

1 Google's strategy of locking up access to publisher
2 inventory through DFP, if that happened, that would start a
3 cycle of network effects in which alternatives to Google's
4 ad tech products would become more attractive?

5 A I don't recall using that exact language. I don't know
6 if you're citing from my report. But it's header bidding
7 enabling other potential rivals to attract advertising the
8 publishers realized network effects and threatened Google's
9 marketing power. That's fair.

10 Q And with header bidding, DFP's advantageous access to
11 AdX would become less relevant?

12 A If AdX's market power were lessened, yes, that would
13 reduce the impact of that conduct.

14 Q I want to ask you about something you specifically
15 wrote.

16 You have your expert report -- opening expert
17 report -- all of your expert reports in the binder that
18 plaintiff counsel gave you. And in your report, you have an
19 Appendix L.

20 MR. ISAACSON: It's L1.

21 MS. WOOD: Okay.

22 MR. ISAACSON: You have to go to the back and
23 there's lettered appendixes.

24 BY MR. ISAACSON:

25 Q And at page L6, this is where you have your discussion

1 of emergence of header bidding. You remember this; right?

2 A I do.

3 Q Okay. And at paragraph 34 of this section, the
4 paragraph that begins "ultimately"; are you with me?

5 A Yes.

6 Q Okay. And in the second sentence, it begins "in the
7 extreme"; are you with me?

8 MS. WOOD: Your Honor, I will just rise again to
9 say my understanding is this material was redacted by
10 Google. If Google doesn't want to keep it confidential,
11 that's fine, or if it's been since amended, but I have
12 paragraph 34 as being under seal.

13 MR. ISAACSON: I'm just going to --

14 THE COURT: All right. Let me get to it again.
15 All right. This is the appendix to the original report;
16 correct?

17 MR. ISAACSON: Yes.

18 THE COURT: All right.

19 MR. ISAACSON: As long as this is not a third
20 party that's claiming this, I'm going to plow ahead.

21 BY MR. ISAACSON:

22 Q Are you with me the sentence that begins "in the
23 extreme"?

24 A Yes.

25 Q It says: "In the extreme, if publishers could in this

1 way directly connect to large demand sources like Facebook,
2 Amazon and/or AT&T/AppNexus with excellent targeting data,
3 Google might be bypassed in its market power over
4 advertisers and publishers eroded."

5 And my question, sir, is, you say "in the
6 extreme," but that has happened; hasn't it? Publishers can
7 connect through Amazon's header bidding wrappers to
8 advertising demand on Amazon?

9 A So it's my understanding that Amazon's ad network sells
10 its O&O or amazon.com or Amazon properties. It's Amazon's
11 DSP that would be Amazon's buying tool connecting through
12 header bidding wrappers for open-web display.

13 Q All right. So what you've described as in the extreme
14 has actually happened through the Amazon DSP, the header
15 bidding wrappers, publishers can directly connect to demand
16 sources on Amazon?

17 A This is distinguishing between Amazon's ad network and
18 Amazon's DSP. So it's my understanding the ad is not
19 bidding through these header bidding wrappers for open-web
20 display.

21 Q But you are agreeing with me that through Amazon's DSP,
22 that what you say is in the extreme has come to pass, that
23 publishers can directly connect to large demand sources like
24 Amazon?

25 A That is not what is being referred to here, although

1 it's just saying Amazon.

2 Q That is literally what has happened, though; hasn't it?
3 That it has literally happened that publishers can directly
4 connect to large demand sources like Amazon through the
5 Amazon DSP?

6 A It can connect to Amazon's DSP but not to Facebook for
7 open-web display.

8 Q All right. And Amazon's DSP has advertising demand;
9 right?

10 A Yes.

11 Q Okay. Publishers can also connect through Prebid
12 header bidding to advertisers on exchanges and DSPs;
13 correct?

14 A Yes.

15 Q Okay. With respect to ad exchanges, you agree that
16 header bidding has increased competition amongst ad
17 exchanges; correct?

18 A I'm sorry. Can you please repeat?

19 Q Sure.

20 With respect to ad exchanges, you agree that
21 header bidding increased competition amongst ad exchanges?

22 A Relative to the waterfall within an auction, header
23 bidding allows for real-time competition among these
24 exchanges.

25 Q Well, you said also that header bidding has made it

1 easier to multi-home across exchanges; right?

2 A In real time, that's correct. Header bidding allowed
3 publishers to call multiple exchanges at the same time.

4 Q All right. And you agree that multi-homing can
5 intensify competition and reduce market power; correct?

6 A Multi-homing is a broad term, but there are forms of
7 multi-homing that, yes, can intensify competition, reduce
8 switching costs, reduce market power.

9 Q Well, let's be specific to the multi-homing that we're
10 talking about.

11 The multi-homing that header bidding makes easier
12 can intensify competition and reduce market power; correct?

13 A Among exchanges participating in header bidding, yes.

14 Q Would you take a look at your rebuttal report. I want
15 to ask you about something else you wrote. All right.

16 Would you turn to page -- paragraph 695. It's at the bottom
17 of page 240 and continues on the next page.

18 Are you with me?

19 A Yes.

20 Q You write that Dr. Israel asserts that Professor Lee
21 acknowledges that header bidding fosters real-time
22 competition amongst multiple exchanges. And then you say
23 that Dr. Israel neglects that the widespread adoption and
24 use of header bidding is therefore a plain example of the
25 vibrant competition among ad exchanges that continues today.

1 As of your rebuttal report, your opinion was that
2 the widespread adoption and use of header bidding is a plain
3 example of the vibrant competition among ad exchanges that
4 continues today. I'm correct about that; aren't I?

5 A This is quoting Dr. Israel.

6 Q No. The quote is --

7 A The whole quote is Dr. Israel.

8 Q Oh, the whole quote is Dr. Israel.

9 Do you agree with Dr. Israel?

10 A No.

11 Q You do not agree that header bidding has caused vibrant
12 competition amongst ad exchanges?

13 A No, as I discussed in my direct.

14 Q Do you agree that the ad exchanges are
15 hyper-competitive?

16 A I think in an auction, compared to the waterfall,
17 header bidding by enabling real-time competitions
18 intensifies competition for an impression. But looking at
19 the entire ad exchange market, I wouldn't characterize it as
20 such.

21 Q Do you think that header bidding caused the ad exchange
22 market to become hyper-competitive?

23 MS. WOOD: Objection. Asked and answered.

24 THE COURT: Sustained.

25 BY MR. ISAACSON:

1 Q Okay. The -- looking back then at your Appendix L,
2 page L11.

3 A Which report please? Which report?

4 Q Your opening report. Appendix L.

5 MR. ISAACSON: Can we put Figure 152 on the
6 screen.

7 BY MR. ISAACSON:

8 Q Figure 152 is from your report; correct?

9 A It's a Google presentation, but it is referenced in my
10 report.

11 Q Right. It's referenced in your report because you say:
12 "Google documents also identified the header bidding
13 infrastructure developed by Facebook and Amazon, as an
14 especially important threat." And then you said, for
15 example, there's a 2016 slide deck. And then you put this
16 Figure 152 -- which I would like to mark as Lee
17 Demonstrative 1 -- as Google's nightmare scenario. All
18 right. That's what you put in your report, Google's
19 nightmare scenario; correct?

20 A Yes. That's what it says.

21 Q Okay. And the nightmare scenario involved publishers
22 using a Facebook header bidder on Facebook pages, and then
23 Facebook could develop a DFP replacement?

24 A Would you give me a moment to read this slide?

25 Q Sure.

1 A Okay. Can you repeat your question?

2 Q Sure. The nightmare scenario that was being described
3 here involved publishers using a Facebook header bidding on
4 the Facebook pages, and then Facebook develops a DFP
5 replacement?

6 A That is what is being discussed as a possibility.

7 Q Right. And according to your report, that nightmare
8 scenario also applied to Amazon?

9 A It appears to be as well applying to Amazon.

10 Q All right. And you gave testimony about entry barriers
11 to these various markets, such as the publisher ad server
12 market, caused technical difficulties, et cetera.

13 You don't really believe that Amazon or Facebook
14 face significant entry barriers if they want to build a
15 publisher ad server; do you?

16 A I do.

17 Q Okay. And you've also reached the opinion that header
18 bidding technology might develop to manage both guaranteed
19 and remnant inventory which would reduce publisher reliance
20 and DFP and reduce the source of Google's market power;
21 correct?

22 A I'm sorry. Are you reading from the slide?

23 Q No. No. I'm moving on to a new question. Sorry. I
24 should have said I'm leaving the slide.

25 You've also reached the opinion that header

1 bidding technology could develop to manage both guaranteed
2 and remnant inventory, which would reduce publisher reliance
3 of DFP and reduce a source of Google's market power;
4 correct?

5 A Either header bidding tools themselves or working with
6 other partners could develop that functionality, that's
7 correct.

8 Q And this is happening; isn't it? The Trade Desk has
9 integrated with Prebid and allows direct programmatic sales?

10 A I don't recall all the functionality of Trade Desk's
11 open-path product, but, no, it's limited in adoption for a
12 limited subset of use cases.

13 Q All right. And what you're talking about that that
14 option as being direct programmatic sales?

15 A I may have discussed this in my report, I just don't
16 remember all the deals that open path facilitates at this
17 moment.

18 Q All right. Header bidding also allowed publishers to
19 circumvent Google's first and last look because it granted
20 and allowed demand sources to submit bids for all
21 impressions; correct?

22 A No, that's not quite right.

23 Q Well, all right.

24 Do you agree that header bidding allowed exchanges
25 to compete against each other on the basis of real-time

1 demand as opposed to being relegated to a waterfall where
2 they would be ranked on the basis of historical performance?

3 A Yes.

4 Q And header bidding also enabled publishers to
5 circumvent what you called Google's policy, permitting only
6 AdX to submit real-time bids within DFP; correct?

7 A Yes. But they're still subject to last look.

8 Q And you, from your study, determined that by 2015,
9 header bidding had gone viral; correct?

10 A I don't recall if I was quoting some other document or
11 used that language directly. But adoption of header bidding
12 was growing around that time.

13 Q All right. And do you recall citing sources that from
14 2015 it had gone viral?

15 A I'm happy to look. I don't recall that particular
16 word.

17 Q Let's take a look at paragraph 154 of your report.
18 Opening report, page 68.

19 A Which part of the page?

20 Q This would be Footnote 205. And at the end of that
21 Footnote, you quote a source as saying: "Header bidding
22 made it to ad tech somewhere around 2014, and only after one
23 year in 2015, the technique went viral."

24 A I see that.

25 Q Okay. And you agree that competition from header

1 bidding incentivized Google to innovate?

2 A Yes. Header bidding was an impetus for the
3 introduction of Open Bidding some years later.

4 Q And I appreciate that, sir. But it's also -- the
5 competitive threat of header bidding incentivized Google to
6 innovate with Open Bidding, but it also generally created
7 the incentive for Google to innovate, period?

8 A I think competition tends to incentivize firms to
9 create value by innovating.

10 Q Right. And the introduction of header bidding, for
11 example, is an example of greater competition spurring
12 Google to innovate?

13 A Greater perceived competition, at least in the case of
14 header bidding, but some greater competition, that's right.

15 Q Okay. Now, if you return to the -- your appendix and
16 go to page L12, you'll see the title, L3: "Google's
17 Responses to Header Bidding."

18 A I see that.

19 Q Okay. And in this section, you identified two Google
20 responses to header bidding. One was on the next page you
21 see the title "Exchange and Open Bidding," which you just
22 mentioned? Do you see that?

23 A Yes.

24 Q And the other, if you turn the page, it's in the next
25 title: "Adjustments to DV360's Bidding Strategies"; do you

1 see that?

2 A Yes.

3 Q And after that, you go to L4, and you're going to talk
4 about Dynamic Revenue Sharing.

5 Those are the two responses to header bidding from
6 Google that you identified; right?

7 A Well, in paragraph 47, I note that there was a
8 multi-pronged effort with other adjustments, but the two
9 that you listed are contained within those responses.

10 Q And with regards to the adjustments to DV360's
11 bidding -- well, with regards to Open Bidding, you've not
12 given an opinion in this case that Open Bidding was
13 anticompetitive; have you?

14 A No, I have not given that opinion.

15 Q Okay. And with regards to adjustments to DV360 bidding
16 strategies, DV360 is not in your relevant markets; correct?

17 A It is not contained in any of the three relevant
18 product markets.

19 Q And you've not given any opinions in this case that
20 DV360's bidding strategies were anticompetitive; correct?

21 A No, I have not offered an opinion that any of these
22 bidding strategies on their own are anticompetitive.

23 Q And you did not do any empirical or quantitative
24 analysis to show that Google had any effect on the number of
25 header bidding transactions; right?

1 A I'm just thinking through all the analyses that I ran.

2 I don't recall analyzing the impact of Google's
3 conduct on the total number of -- a quantitative analysis on
4 the total number of header bidding transactions.

5 Q All right. Thank you.

6 I'd like you to look at DTX 1898, which is in the
7 binder I gave you. We can also put it on the screen.

8 THE COURT: Any objection to 1898?

9 MR. ISAACSON: This is a chart from Dr. Israel's
10 report.

11 THE COURT: If it's from -- that's your expert,
12 though.

13 MR. ISAACSON: Yes.

14 THE COURT: Is there any objection?

15 MS. WOOD: Your Honor, again, it's a little
16 unorthodox to bring in evidence before the witness is here
17 to testify about it, but subject to tying it up through
18 Dr. Israel --

19 THE COURT: I think it already happened in the
20 direct case, so I'm letting it in.

21 (Defense Exhibit Number 1898 admitted into evidence.)

22 BY MR. ISAACSON:

23 Q And I just want to show you this chart.

24 A Which DTX is this?

25 Q 1898. It's on your screen, too.

1 A Okay.

2 Q Now, you had a chance to see this chart when you
3 reviewed Dr. Israel's report?

4 A I reviewed his reports, so I've seen this.

5 Q And what this shows is the percentage on DFP of
6 indirect web impressions won by header bidding; do you
7 remember this?

8 A I recall -- I don't recall all the figures I've seen,
9 but I reviewed this.

10 Q And what this shows is that since 2018 through nearly
11 the end of 2022, the percentage of indirect web impressions
12 won by header bidding on DFP has risen from a little over
13 25 percent to close to 45 percent; right? Maybe it's
14 42 percent, but a little above 25 percent, a little above
15 40 percent; right?

16 A That's what the chart shows.

17 Q Okay. And the -- if I can look at -- if we can look at
18 Plaintiffs' Demonstrative R.

19 A Is that in this binder?

20 Q It's about to be put on the screen. This is one you
21 looked at in your direct testimony.

22 A Yes.

23 Q And this was when you outlined how bidding worked on
24 AdX and third-party exchanges, and I think it was your
25 testimony that you were saying this is how Google

1 disadvantages bidding by header bidding; right?

2 A I wasn't discussing header bidding in this slide.

3 Q Okay. Or disadvantages third-party exchanges.

4 A This is showing how a higher take rate from ads on
5 third-party exchanges can lead to lower submitted bids.

6 Q And that includes third-party exchanges working with
7 header bidding; right?

8 A It could be bidding into Open Bidding as well.

9 Q Okay. And the -- if you can look at your -- the
10 Plaintiffs' Demonstrative O. That's going to go on your
11 screen. You remember this.

12 This was Google Ads win rate on AdX compared to
13 the win rate on third-party exchanges; correct?

14 A Yes.

15 Q Okay. And this is impressions, not revenues; right?

16 A This is -- it's impressions.

17 Q Right. And so you're lumping in together impressions
18 that were gotten in for a penny and impressions that were
19 gotten for \$7?

20 A This would be both the -- all the auctions in that GAM
21 log-level data sample.

22 Q Oh, this is the GAM data. All right.

23 And this is a one-month sample or a one-day
24 sample?

25 A So my recollection that June 2023 sampled auctions

1 particular sections, like, 35 to 39 second, I think, of a
2 minute. So it's a sub-sample of auctions throughout the
3 month, but one day is removed, and that's the day where we
4 have all the auctions. So it's a sub-sample of the auctions
5 run across the month.

6 Q Is it on one day?

7 A I can check my report. But if it's not the June 28th
8 sample, it would be -- I can look in my report and check
9 whether it's from a single day or throughout the month.

10 Q You've got 26 percent and 1 percent. That's
11 27 percent. So 73 percent of the -- of the wins on AdX are
12 coming from someplace else?

13 A Not necessarily. Some are not allocated. Some are not
14 won; they were floored, for example.

15 Q Oh, right. So -- well, this says -- oh. But some
16 portion -- so the 77 percent are either no one won or
17 somebody else won?

18 A What is 77?

19 Q Oh, I'm sorry. 73. Sorry.

20 26 -- you've got 27 percent wins here; right?
21 You've got 26 plus one?

22 A So this says when Google Ads submits a bid, it wins
23 26 percent of the time in the sample of auctions.

24 Q And the third-party exchanges wins 1 percent, and
25 somebody else is winning the rest or they're going unsold?

1 A Yes.

2 Q And so what this chart isn't telling you is who is
3 winning most of the impressions here; right?

4 A Well, they have other analyses that speak to Google
5 Ads's share of impressions won by all buying tools, for
6 example.

7 Q All right. And the -- if we could look at Plaintiff
8 Demonstrative R. Okay. We looked at that. So -- and then
9 so -- oh, I just did this. All right.

10 Now, can we look at DTX -- PTX 1315, which has
11 been previously admitted.

12 You were here when this chart was discussed with
13 Professor Weintraub?

14 A Yes, I recall being here.

15 Q Okay. This is his chart. This is data on all queries
16 going to the above exchanges asking for a bid. And Google's
17 AdX, including with Google Ads, is winning 17 percent of all
18 bids at the end of the chart in 2022 down from about
19 50 percent in 2015. You see that's what's happening here?

20 A I didn't analyze the underlying data, but this is I
21 think what the -- the chart says. I don't know how he's
22 defining precisely the win rate, but I'll take your
23 representations.

24 Q All right. And you'll see there's two exchanges at the
25 bottom, each of which are winning about 5 percent. So you

1 see that in 2022?

2 A I see that.

3 Q Okay. So five plus five, 10 percent.

4 So in 2022, for all of the queries, Google is
5 winning -- AdX is winning about 17 percent, and these two
6 exchanges are winning 10 percent; right?

7 MS. WOOD: Objection. Foundation. Again, these
8 questions could be put to Professor Weintraub who testified.
9 I'm not sure the benefit to the Court of having this witness
10 testify about data he did not prepare or rely upon in his
11 report.

12 MR. ISAACSON: They were put to him.

13 THE COURT: Wait.

14 MR. ISAACSON: I'm sorry.

15 THE COURT: I'm going to overrule the objection.
16 I think this is relevant evidence.

17 Go ahead.

18 MR. ISAACSON: Thank you.

19 BY MR. ISAACSON:

20 Q You see that; right? 17 percent versus 10 percent from
21 two of the exchanges?

22 A They're bidding likely on different sets of
23 impressions. For example, AdX can be bidding on all the
24 impressions, other exchanges can be bidding on small
25 subsets. So I don't think it's easy to just compare win

1 rates without understanding what impressions these different
2 exchanges are bidding on.

3 Q This is win rates on all the queries going into these
4 exchanges; you understand that?

5 A I think it's conditional on them submitting a bid.

6 Q This is -- yes. You don't win if you don't submit a
7 bid. I understand that.

8 But this is your win rate on all of the queries?

9 A I'm not familiar with, again, how this is constructed.
10 If different exchanges aren't participating in certain
11 auctions, then their written rates are computed on a
12 different set of auctions.

13 Q Right. And you would know that the reason there's only
14 two exchanges here at the bottom is because we don't have
15 data on -- so 17 percent, 10 percent, that leaves a lot of
16 bids unaccounted for here, a lot of wins. We don't have the
17 data on who's winning those bids; right?

18 A I don't know the data that Dr. Weintraub used.

19 Q Right. And going to -- well, just going back to your
20 Exhibit O, you also don't know who's missing on winning bids
21 on that chart?

22 THE COURT: Again, that's been asked and answered.

23 MR. ISAACSON: Okay. All right.

24 BY MR. ISAACSON:

25 Q Header bidding is a software tool, a type of ad tech,

1 that enables publishers to receive real-time bids from one
2 or more exchanges running auctions; right?

3 A That's fair.

4 Q Okay. And that header bidding ad tech is not a
5 publisher ad server in your opinion; right?

6 A No.

7 Q It's not an ad exchange in your opinion; correct?

8 A No.

9 Q It's not an advertiser ad network in your opinion;
10 correct?

11 A It is not.

12 Q Okay. You believe header bidding is valuable ad tech
13 that's technically distinct from publisher ad server's
14 exchanges or advertiser ad networks; right?

15 A It's a different product, different functionality than
16 those other three products.

17 Q And I think you said that header bidding is ad tech
18 that's used alongside or in conjunction with other ad tech;
19 correct?

20 A In conjunction with other demand sources like ad
21 exchanges, that's right.

22 Q Header bidding is ad tech used in conjunction with
23 other ad tech to create competition; right?

24 A It's used to facilitate real-time competition among ad
25 exchanges and demand sources.

1 Q And header bidding is not included in your exchange
2 market even though it is a threat to -- it is a competitive
3 threat in that market; correct?

4 A As we discussed before, header bidding alongside other
5 ad exchange or other potential publisher ad server entrance
6 could pose a threat to DFP's market power.

7 Q I'm being specific to the market. And I think we agree
8 on this, but I just want to make sure we have this on the
9 record.

10 You agree that header bidding, although it is not
11 part of your market for ad exchanges for open-web display,
12 is a competitive threat to the firms in that market?

13 A It can facilitate entry and expansion but not to the
14 extent it constrains the exercise of market power in those
15 markets.

16 Q You don't believe header bidding has constrained the
17 exercise of market power in your ad exchange market?

18 A If by constraining market you mean preventing AdX from
19 charging super competitive fees, then, no, it has not.

20 Q And you don't believe that header bidding has
21 constrained the exercise of market power in your publisher
22 ad server market?

23 A It has not constrained DFP's substantial and sustained
24 market power.

25 Q And I noticed this time you didn't mention anything

1 about super competitive fees.

2 You haven't reached any opinions about super
3 competitive fees in the publisher ad server market; have
4 you?

5 A I have.

6 Q Okay. Did you testify about that in your direct?

7 A I don't recall discussing DFP fees in my direct.

8 Q All right. The -- I want to touch on a specific
9 competitor here, Criteo. I would like to show you DTX 1420,
10 which is in your binder.

11 THE COURT: Any objection to 1420?

12 MR. ISAACSON: This is a 10-K from Criteo. And in
13 the binder, because the 10-K is very large, we'll just put
14 the excerpts for --

15 MS. WOOD: I would just object on hearsay and
16 foundation grounds.

17 THE COURT: Well, if it's a 10-K, I'm going to
18 allow it in.

19 MS. WOOD: I would still object on foundation
20 grounds.

21 THE COURT: Overruled.

22 (Defense Exhibit Number 1420 admitted into evidence.)

23 MR. ISAACSON: All right. Page 12.

24 THE COURT: We're not going to put the whole thing
25 in, just the pages you're referencing.

1 MR. ISAACSON: I could do it either way, Your
2 Honor.

3 BY MR. ISAACSON:

4 Q This discussion of the Criteo -- on page 12 of 168 at
5 the bottom, there's a discussion of the Criteo Commerce
6 Media Platform; correct?

7 A I see that section.

8 Q Okay. And as part of your study in this case, you have
9 looked at Criteo and what it does; right?

10 A It is a firm offering a product to the advertiser ad
11 network market. So, yes, I did look at Criteo.

12 Q Okay. And it says in the second sentence there: "With
13 our unique Commerce Media Platform, we offer marketer and
14 media, owners, clients a single platform for first-party
15 data-based marketing and monetization." So I just want to
16 talk about what first-party data is versus third-party data.

17 First-party data would be data that you get from,
18 for example, retailers as opposed to the data on an ad
19 exchange which you're getting from your customers. And if
20 you want to explain it differently --

21 A No, I'm trying to remember. I know I discussed this in
22 my report.

23 I don't have a precise recollection. I think,
24 like, first-party data would be if a customer of Criteo is
25 bringing its own data to use for targeting, for example.

1 Q And Criteo is getting data not just from the
2 transactions it's doing, it's getting data from its large
3 retail customers to assist it, for example, in targeting
4 advertising?

5 A I believe Criteo, like DSP, allows its advertiser
6 customers to bring in data to facilitate the purchase of
7 display.

8 Q And on the next page you can see -- you can see on that
9 page how they describe how they're on the demand side,
10 they're on the supply side, there's a chart of their overall
11 system on the next page, and then at the bottom under our
12 data assets, do you see that?

13 A Is it in the chart?

14 Q No. The page with the chart at the bottom, there's a
15 section called "our data assets," it's in bold "our
16 first-party data base buyer index."

17 A I see that.

18 Q This is their first-party data. And you see where it
19 says in the second line: "Giving us exposure to over
20 \$1 trillion in online sales on a combined basis in 2022,
21 representing approximately 40 percent of the global retail
22 e-commerce sales excluding China."

23 And so when you've been discussing data or scale,
24 you've been discussing that with respect to the scale --
25 you've now been including within that first-party data, such

1 as Criteo has; right?

2 A So if this is first-party data that clients can bring,
3 it's not evidence to the extent in which that can be used to
4 help the platform facilitate transactions not involving that
5 client. So the data and scale that I had been discussing
6 was data that the ad tech product, like advertiser ad
7 network, can use for all of its transactions across all of
8 its clients to better target ads, to better optimize CPC,
9 CPM data.

10 So this first-party data was not able to be used
11 in that fashion, wouldn't help with those kinds of --
12 necessarily help with those kinds of optimizations.

13 Q It does help you target specific -- it helps
14 advertisers target you and I with better ads; right?

15 A For that advertiser's campaign it would.

16 Q Yeah. Yeah.

17 So you were not expressing an opinion in this case
18 as to whether there's a relevant antitrust market that's
19 comprised of display advertising; correct?

20 A I'm not expressing an opinion on a relevant product
21 market comprising advertisements themselves.

22 Q And the three markets that you're discussing today are
23 markets for ad technology for open-web display advertising,
24 not for the advertising?

25 A Not for the advertising; it's the tools used to

1 transact a certain form of advertising.

2 Q Okay. And the relevant markets you defined are not
3 comprised of transactions to purchase advertising between
4 publishers and advertisers?

5 A The markets do not contain transactions. Again, they
6 contain these products, these publisher ad servers' ad
7 exchanges and advertiser ad networks.

8 Q All right. And you discuss social media.

9 Meta or Facebook has its own proprietary ad tech
10 tools; correct?

11 A Yes.

12 Q So Meta and Facebook -- Meta and Facebook have tools to
13 serve ads that are purchased on its own websites and apps;
14 right?

15 A Yes.

16 Q Meta has ad tech tools for advertisers to buy ads on
17 Meta's digital properties like Facebook and Instagram?

18 A Yes.

19 Q Okay. Meta has its own proprietary ad tech tools to
20 hold auctions for ads on its digital properties?

21 A I believe so, yes.

22 Q Okay. And the same is true for Amazon; right?

23 So Amazon has its own proprietary ad tech tools,
24 including tools to serve ads that are purchased on its
25 website and apps; correct?

1 A So it has integrated tools for its owned-and-operated
2 properties.

3 Q Yes. And that includes integrated tools to serve ads;
4 right?

5 A On its websites, yes.

6 Q Yes. And it has integrated tools for advertisers to
7 place ads on Amazon?

8 A The Amazon ads, yes.

9 Q Okay. And Amazon has ad tech tools to hold auctions
10 for ads on Amazon?

11 A On Amazon's properties, that's my understanding.

12 Q And you don't have an opinion with respect to
13 advertising whether display ads on Meta and Amazon compete
14 for display ads on the open web; correct?

15 A To some degree. But they don't compete for open-web
16 publisher inventory. But for advertiser spending, there's
17 some degree of substitution.

18 Q And what degree of substitution is that?

19 A Not sufficient to constrain the exercise of market
20 power among the open-web display tools.

21 Q No, I'm not talking about the tools now. Okay. So
22 let's be clear here.

23 I'm talking about just the advertising. Right.
24 You don't have an opinion that the display ads on Meta and
25 Amazon -- about whether the display ads on Meta and Amazon

1 compete for display ads on the open web, just the
2 advertising, not the tech tools?

3 A There is some degree of substitution. So in that
4 sense, there is some degree of competition for advertiser
5 spending.

6 Q And when an advertiser switches spend from open-web
7 display ads to Amazon or Facebook ads, the advertiser is
8 also switching the buying tools it uses; right?

9 A Well, I don't know if that's quite right, and I can
10 explain why.

11 Q I mean, think of this is as tautological. So let me
12 see.

13 So if I'm an advertiser spending for open-web
14 display ads, in order to get those ads, I'm using a certain
15 type of ad tech and a certain type of buying tool. And if I
16 want to buy on Amazon or Facebook, I have to use their
17 buying tools; right?

18 A Different tools are used to buy this walled-garden
19 inventory.

20 Q Right. And the same is true if an advertiser switches
21 spend from open-web display ads to Amazon or Facebook, the
22 advertiser then participates in auctions on these sites and
23 not on ad exchanges; right?

24 A So an advertiser can use both jointly for maybe
25 complementary objectives, maybe different objectives.

1 So you can see spend changing, but that could be
2 meaning an advertiser's just drawing down spend from both,
3 maybe drawing down faster in one or the other. I wouldn't
4 necessarily call that switching, but they are using
5 different tools to buy inventory on different sites.

6 Q All right. If an -- just hypothetically if an
7 advertiser switches spend from open-web display to Amazon,
8 the advertiser is then participating in auctions on Amazon
9 and not on ad exchanges; correct?

10 A If they move \$1 from one to the other; that's correct.

11 Q And if the advertiser moves \$1 from open-web display
12 ads to Amazon or Facebook, the ads will be served by the
13 proprietary ad servers of those companies and not DFP or
14 some other publisher ad server on the open web; correct?

15 A In that case, that's right.

16 Q If I can show you PTX 1249, which is a figure from your
17 report. It's in your binder, but it will be easily seen on
18 your screen.

19 THE COURT: I believe that's already in.

20 MR. ISAACSON: I don't think so.

21 THE COURT: All right. It's a plaintiffs'
22 exhibit?

23 MR. ISAACSON: Yes.

24 THE COURT: All right. Then it's in.

25 (Plaintiffs' Exhibit Number 1249 admitted into evidence.)

1 BY MR. ISAACSON:

2 Q All right. This is a chart from your report using
3 EMARKETER data that shows the growth in U.S. display native
4 and video ad spending, web and app, from 2008 to 2022;
5 correct?

6 A Yes.

7 Q Now, EMARKETER is a public source of data that you and
8 Dr. Israel have relied on in this case; correct?

9 A I use EMARKETER data for some of these figures. That's
10 right.

11 Q And EMARKETER is also widely used in the industry;
12 isn't it?

13 A I understand it's used in the industry.

14 Q Okay. And EMARKETER has a definition of display ad
15 spending.

16 Are you familiar with that definition?

17 A I don't recall the exact one. I know it's broader and
18 has different subcategories.

19 Q All right. There is a subcategory -- well, let me see
20 if I can remind you.

21 If you look at DTX 2047, and this comes out of the
22 EMARKETER data.

23 THE COURT: Are you moving 2047 in?

24 MR. ISAACSON: Yes.

25 THE COURT: Any objection?

1 THE WITNESS: Is this in the binder?

2 MR. ISAACSON: Yes. This is in the black binder.
3 You should have it.

4 MS. WOOD: 2147?

5 THE COURT: Oh, 2147.

6 MR. ISAACSON: Yes. It is an excerpt because this
7 is in the middle of the large data file.

8 MS. WOOD: I would object on hearsay and
9 foundation.

10 MR. ISAACSON: It doesn't have to be admitted for
11 the truth, Your Honor. This is an industry source
12 defining -- that's being used by all parties defining
13 industry terms.

14 MS. WOOD: They're offered -- I would argue
15 they're offering it for the truth by defining what a display
16 ad is. I don't see any other purpose with this witness.

17 MR. ISAACSON: Professor Lee, in his opening
18 demonstrative about market definition, said you need to look
19 at industry recognition. This is an industry sourced,
20 widely used, used by both parties. This is industry
21 recognition.

22 THE COURT: Well, wait. You're testifying. I
23 want to hear the answer from the witness.

24 BY MR. ISAACSON:

25 Q So --

1 THE COURT: Did you look at this document at all
2 in the course of preparing your report.

3 THE WITNESS: I don't recall this document. I
4 know that there is -- EMARKETER has a bunch of definitions,
5 and this might be one of them. I recall they have another
6 definition for display banner ads as well, and they break
7 out native ads. So this may be an entry in this glossary,
8 but there are also other categories that correspond to
9 display banner ads if I'm recalling correctly.

10 BY MR. ISAACSON:

11 Q And my colleague, Ms. Spevack, has also pointed out to
12 me that this proposed exhibit was in the objected to by
13 plaintiffs.

14 THE COURT: It was not previously objected to?

15 MR. ISAACSON: Correct.

16 MS. WOOD: Well, again, I think that's subject to
17 how it comes in.

18 THE COURT: All right. Let me try to find it
19 here.

20 MS. WOOD: I would also note the exhibit, by
21 counsel's own acknowledgment, is an excerpt of a much, much
22 larger file.

23 MR. ISAACSON: The larger file has all the
24 numbers.

25 MS. WOOD: Understood. But to the extent there

1 were objections made to the larger file versus objections to
2 a definition contained in a larger data file --

3 MR. ISAACSON: I would just intend to ask him if
4 he is aware that EMARKETER defines digital ad spending and
5 display ad spending as is established in this document.

6 THE COURT: All it establishes is that -- the only
7 question then is whether or not he understands that to be
8 how that entity defines it. I don't think that adds that
9 much to the case unless you have further evidence down the
10 road.

11 So you can ask the question and both get the
12 answer, but I'm not going to admit the exhibit itself.

13 BY MR. ISAACSON:

14 Q So there's two definitions in here, digital ad spending
15 and display ad spending; do you see that? Over to the right
16 is digital ad spending.

17 A Are they different definitions, or are they
18 corresponding to the left display --

19 Q They are different definitions.

20 A What's the definition for display ad spending then?

21 Q So display ad spending -- well, I'm just -- I'm just
22 saying this because you said there were categories that
23 EMARKETER had that you referred to.

24 Doesn't EMARKETER define digital ad spending and
25 display ad spending, if you know?

1 A I recall that they have many different definitions for
2 a variety of advertising formats.

3 Q And were you familiar, when you were using EMARKETER
4 data, that EMARKETER defines display ad spending as
5 including advertising that appears on desktop and laptop
6 computers, as well as mobile phones, tablets and other
7 Internet-connected devices for all formats mentioned,
8 including banners, rich media, sponsorship videos, and ads
9 such as Facebook's news feed ads and Twitter's promoted
10 tweets?

11 A I recall I discussed, if not this particular section,
12 these broader categories in my initial report. I'm happy to
13 point you to that.

14 I also note there -- there's a footnote that talks
15 about how display ads and some sources can be broader and
16 include things like native. But display banner ads is what
17 I'm using to be precise, and my entire discussion I separate
18 from display banner and native.

19 Q All right. The -- now, going back to how the relevant
20 product markets you evaluate aren't the advertising or the
21 advertising transactions; they're the tools.

22 A I apologize. Can you please repeat?

23 Q Yeah. Going back to -- that the markets that you were
24 defining are the ad tech tools and not the underlying
25 advertising or advertising transactions; you remember that

1 discussion?

2 A I remember that.

3 Q Okay. When you calculate market shares for those ad
4 tech tools, you use advertising spending on -- sometimes you
5 use advertising spending on impressions for open-web display
6 advertising; right?

7 A I calculate market shares across a variety of metrics,
8 including spending on open-web display ads.

9 Q And that is -- those are transactions, those are
10 advertising -- advertisers buying open-web display
11 advertising impressions; correct?

12 A Yes.

13 Q Okay. And in other cases calculating market shares for
14 these tools, you use impressions for open-web display
15 advertising; correct? The number of impressions.

16 A So I'm not sure I quite understand.

17 So, again, market share is -- I compute across a
18 variety of metrics. Impressions and then the spending from
19 those impressions, sometimes the net revenue is collected
20 from those impressions.

21 Q So I'm talking about the impressions -- we already
22 talked about the spending.

23 The impressions, when you calculate market shares,
24 those are the impressions that are transacted between the
25 publisher and the advertiser; right?

1 A They're the impressions facilitated by that particular
2 tool.

3 Q And so, for example, if we can look at PTX 1237, which
4 has been previously admitted, along with PTX 1237A. We need
5 to make sure we're putting the -- yes, the confidential
6 version up.

7 So this is a chart of yours for worldwide indirect
8 open-web display impressions transacted through ad
9 exchanges.

10 So these -- this market share chart is a chart of
11 impressions transacted through ad exchanges; correct?

12 A Yes.

13 Q Okay. And if we look at PTX 1265, which has not been
14 previously admitted.

15 MR. ISAACSON: So I would like to admit 1265 and
16 1265A for a public version.

17 THE COURT: Any objection?

18 MS. WOOD: No objection.

19 THE COURT: All right. It's in.

20 (Plaintiffs' Exhibit Numbers 1265 and 1265A admitted into
21 evidence.)

22 BY MR. ISAACSON:

23 Q This is, again, a worldwide chart that you did, and
24 this is of spend transacted through ad exchanges; correct?

25 A Yes.

1 Q Okay. And I don't want to -- oh, I apologize. I'm
2 going through this to make sure that the Court understands
3 how your market shares are being calculated, but I don't
4 want to have to come back to these charts.

5 MR. ISAACSON: If you can go back to 1237, Matt,
6 just to look at the number. All right.

7 BY MR. ISAACSON:

8 Q And what this shows is worldwide about -- Google AdX
9 share is about 50 percent, right, on an impression basis on
10 exchanges?

11 A At what point in time?

12 Q At the end in -- in 2022.

13 A At the end of 2022, it's about there, yes.

14 Q Right. And it's come down from above 60 percent since
15 2019 and 2020; right?

16 A There's been some variation in its share of
17 impressions.

18 Q Right. And a lot of that variation has been a decline;
19 right?

20 A I mean, it increased in the beginning of this period
21 and then declined. So there's a variation over the period.

22 Q All right. Let's go back to 1260 then, which was just
23 admitted. This is -- I'm sorry, 1265. Let's go back to
24 1265. This is the spend worldwide. All right.

25 On a spend basis in 2022, Google's market share is

1 under 40 percent; right?

2 A Well, Google -- also there's this backfill component,
3 which was coming from Google's other AdSense product. I
4 don't want to go into the details, but if you're talking
5 about Google's overall share, it's still above 40.

6 Q Well, no. I'm talking about Google AdX. This is your
7 AdX market share chart.

8 A Uh-huh.

9 Q Okay. AdX's share is under 40 percent; right?

10 A So with what 40 percent, this is for the overall 2022
11 it's 40 percent, but I think this last month, it does appear
12 to be below 40.

13 Q Yeah. And AdSense isn't in any of your relevant
14 markets; right?

15 A Well, to be conservative, I'm accounting separately
16 from AdX, this part of AdSense that comes into DFP. Like an
17 exchange, it's a source of remnant demand.

18 Q Is AdSense in any of your relevant markets?

19 A No. AdSense is not an ad exchange.

20 Q The -- so you have some charts with impressions and
21 some with ad spend. And when you were asked about the
22 market share charts for impressions, you talked about
23 impressions could contribute to scale; do you remember that?

24 A It's a measure of a scale and volume.

25 Q All right. Now, market share -- tell me if you agree

1 with me -- is traditionally measured by dollars and not by
2 product units; right?

3 A I think market shares can be measured in a variety of
4 ways.

5 Q But if I sell, for example, \$101 products and someone
6 else sells \$55 products and they're in the same market, you
7 can see the issue? There's going to be wide differences --
8 on a unit basis, the 100 -- the one selling \$100 -- 100
9 units for \$100 is going to be bigger, and the ones on a unit
10 basis -- on a \$1 basis, the one selling 50 at 5 is going to
11 be bigger; right?

12 MS. WOOD: Objection.

13 THE COURT: I'll sustain the objection.

14 MR. ISAACSON: Okay.

15 BY MR. ISAACSON:

16 Q For impressions and scale, does the quality of
17 impressions matter? Does it matter whether it's a 1 cent
18 impression or a \$7 impression?

19 A Well, it depends on the question being asked.

20 So market share is, at least as I'm using them, is
21 a component of informing market power. Now, economists
22 recognize there isn't necessarily a direct relationship
23 between the two, but if we're trying to understand, for
24 example, AdX's market share over small publishers, small
25 advertisers, maybe understanding how large of a share they

1 have over low CPM impressions is important because the
2 relative scale tells them how reliant these small customers
3 are in AdX. Whereas is if we're looking at remarketing
4 impressions, higher value ones, maybe for those customers
5 who value that, we want to look at those transactions. This
6 here, however, is indeed looking over all transactions. So
7 it really depends on the question being asked.

8 Q So have you overall looked at what the value of scale
9 is depending on its quality, whether it's a 1 cent
10 impression or a \$7 impression? Have you done any analysis
11 of that?

12 A I discuss why scale measured by impressions is useful,
13 as more transactions help them get more data, and that's why
14 impressions have that information, relative scale advantages
15 over data collected per transaction.

16 Q Let's complete the picture. If we can look at
17 PTX 1260, and I would --

18 MR. ISAACSON: This is another one of his charts
19 that I would move to admit, 1260 and 1260A.

20 THE COURT: Any objection?

21 MS. WOOD: No objection.

22 THE COURT: All right. They're in.

23 (Plaintiffs' Exhibit Numbers 1260 and 1260A admitted into
24 evidence.)

25 BY MR. ISAACSON:

1 Q This is U.S. -- we looked at worldwide, this is U.S.
2 impressions. And for U.S. impressions, the ad exchange
3 market is under 50 percent. It looks like around 45 percent
4 in 2022; correct?

5 A Yes.

6 Q Okay. And then if we can look at PTX 1266.

7 MR. ISAACSON: Which I would move to admit with
8 1266A.

9 MS. WOOD: No objection.

10 THE COURT: All right. They're in.

11 (Plaintiffs' Exhibit Numbers 1266 and 1266A admitted into
12 evidence.)

13 BY MR. ISAACSON:

14 Q All right. This is the U.S. using display spend. And
15 here, the market share is just over 30 percent for AdX at
16 the end of 2022; isn't it?

17 A Yes.

18 Q All right. And just so -- I want to look at DTX 1868,
19 which is from Dr. Israel's report.

20 THE COURT: 1868?

21 MR. ISAACSON: 1868.

22 THE COURT: All right. Any objection?

23 MS. WOOD: No objection.

24 THE COURT: All right. It's in.

25 MS. WOOD: Again, subject to tying it up with

1 Dr. Israel.

2 THE COURT: Right. It's in.

3 (Defense Exhibit Number 1868 admitted into evidence.)

4 BY MR. ISAACSON:

5 Q And all I want to do here is make sure we understand
6 what you're doing differently from Dr. Israel. Okay.

7 When you have the ad exchange market in the United
8 States on a spend basis being just over 30 percent, and
9 Dr. Israel is using ad spend here in the United States and
10 he has lower numbers than 30 percent, and that's because
11 Dr. Israel is also including advertising spend on display
12 ads that you don't have, such as social, apps, connected TV,
13 native. I'm probably forgetting something else.

14 That's what's going on here; right?

15 A I don't recall all of the issues I identified with this
16 figure in my reply report, but one difference is that
17 Dr. Israel is including other digital advertising.

18 Q Okay. And if we could look at DTX 1915 which has
19 previously been admitted. This is from Dr. Israel. This
20 says U.S. social media display ad spending.

21 When you are calculating market shares using
22 display ad spending, this is ad spending that you're not
23 including; correct?

24 A It's not available to open-web publishers by and large,
25 so it's not being included to inform market power.

1 Q So this is not open web, so you have market shares
2 based on ad spend, but you're not using these figures
3 because it's not open web; right?

4 A In my opinion, it doesn't help inform market power over
5 open web customers, or customers of open-web display.

6 Q And you agree that by 2022, almost half of all display
7 ad spending in the United States was on social media;
8 correct?

9 A I don't recall how Dr. Israel constructed these
10 figures.

11 Q This is from EMARKETER.

12 A Oh. If that's what it says.

13 Q Yeah. All right. And then if we could look at
14 DTX 1926, which was also admitted.

15 This is EMARKETER data from Dr. Israel's report on
16 U.S. Amazon display ad revenue.

17 A Which figure?

18 Q This is DTX 1926, which should be on your screen.

19 A Okay.

20 Q This is advertising spend on display ads that you do
21 not include in your market share charts where you are
22 calculating advertiser spend; correct?

23 A It's not clear from this alone if it includes Amazon
24 DSP spending, which could be going through changes.

25 Q Well, up top it's display ad revenue. Okay. This is

1 display ad revenue for Amazon.

2 A So Amazon's DSP collects revenue. Right. And some of
3 that spending goes through ad exchanges.

4 Q All right. But you don't -- for ads sold on -- display
5 ads sold on Amazon, you don't include the ad spend in your
6 charts; right?

7 A So you're talking about Amazon as O&O properties?

8 Q Yeah.

9 A They wouldn't be in the ad exchange market share spend.

10 Q Right. And looking at DTX 1920, which has not been
11 admitted.

12 MR. ISAACSON: If we can admit it now or later.
13 I'm happy to move it now.

14 THE COURT: Is this another chart from Dr. Israel?

15 MR. ISAACSON: Yes.

16 THE COURT: Just get it in now.

17 MS. WOOD: Again, the plaintiffs object to the
18 extent it is not ultimately brought in through Dr. Israel.
19 Subject to tying it up with him, we have no objection.

20 THE COURT: All right. It's in.

21 (Defense Exhibit Number 1920 admitted into evidence.)

22 BY MR. ISAACSON:

23 Q This is U.S. mobile in-app display ad spending. Right.

24 So when you have market share charts with display
25 ad spending, you are not including this in-app display

1 spending; correct?

2 A So based on spending -- the spending market shares you
3 showed, in app is not included.

4 Q All right. And that is, according to EMARKETER data,
5 55 percent of all the display ad spending in the United
6 States; correct? In 2022. Over 50 percent.

7 A Does that add up to -- I'm trying to figure out the
8 other chart you showed me was social, which was 48.

9 Q The social also has apps.

10 A Oh, the social also includes apps. Okay.

11 That's what it appears to show.

12 MR. ISAACSON: Okay. And then DTX 1922, which I
13 would also move to admit, and we will discuss it with
14 Dr. Israel.

15 MS. WOOD: No objection subject to tying it up.

16 THE COURT: All right. It's in.

17 (Defense Exhibit Number 1922 admitted into evidence.)

18 BY MR. ISAACSON:

19 Q This is ad spend on connect -- display ad spending on
20 connected TV according to EMARKETER. This is ad spend that
21 you do not use in your market share charts that use ad
22 spend; correct?

23 A Connected TV is not included in those charts.

24 Q Okay. As part of your -- shifting topics.

25 As part of your work in this case, you have said

1 that marketing research and industry participants
2 acknowledge that different forms of advertising can target
3 users at different stages of what is referred to as the
4 marketing funnel; right?

5 A I don't recall the exact language, but that's -- I
6 think I was referring to Google's documents, potentially,
7 for that.

8 Q Well, I think you referred to marketing research and
9 documents and testimony from industry participants all
10 recognizing the funnel.

11 A Okay. Yes. That's correct.

12 Q And the point is, you said -- there's no part of your
13 reports where you criticized the funnel or suggest it should
14 not be used; right?

15 A I think there I'm acknowledging those sources referring
16 to the marketing funnel.

17 Q All right. In fact, if we look at Figure 28 of your
18 opening report, which is page 115, and it's on your screen,
19 too. And I would like to mark this as Lee Demonstrative 2.

20 This is a chart from your report about the
21 distinction between display and search advertising in the
22 marketing funnel. And up at the top, you have awareness,
23 interest and consideration and display is at that part of
24 the funnel, and search is down below for the intent and
25 action; correct?

1 A This is a Google presentation, and that's what the
2 Google presentation is depicting.

3 Q Well, you agree with this representation of the funnel;
4 don't you?

5 A I am noting that Google noted that this is one way of
6 characterizing display and search.

7 Q Well, do you agree with this description of the funnel?

8 A I'm noting that Google has noted that they cater to
9 different parts of the funnel, but I understand that display
10 sometimes can be used in other parts of the funnel. I talk
11 about that in my report and search as well.

12 Q Let me see if I can get an answer from you here.

13 Do you agree with this description of the funnel?

14 A I agree with the description on the right that search
15 has people who are directly searching for what you offer.

16 Q Let me be specific then.

17 The drawing in the blue, all right, do you agree
18 that that's a typical accepted representation of the funnel?

19 A Oh, so not the part that's highlighted, just --

20 Q The blue.

21 A The blue is -- I've seen different words used, but,
22 generally speaking, there's a funnel with these types of
23 stages.

24 Q All right. And do you generally agree that display is
25 at the upper end of the funnel?

1 A I have seen display categories at the upper. I always
2 have seen -- like, for example, CPC display ads sometimes
3 are seen as maybe lower in the funnel, but that display ads
4 can have different purposes useful for different parts of
5 the funnel.

6 Q Well, do you think that display ads are generally
7 upper-funnel advertisements, or do you think that they go --
8 or they generally run throughout the funnel?

9 MS. WOOD: Objection. Asked and answered.

10 THE COURT: I don't think so. No. Overruled.

11 THE WITNESS: I'm not expressing an opinion
12 generally where display is. I'm noting that in these two
13 documents, we noted it as being typically being upper
14 funnel.

15 BY MR. ISAACSON:

16 Q Can we look at Appendix C2 of your opening report,
17 Figure 79. This is, again, the pages that -- you have to go
18 back to the letters, but it will go on your screen.

19 MS. WOOD: Which one?

20 MR. ISAACSON: C2.

21 THE WITNESS: Which figure?

22 BY MR. ISAACSON:

23 Q Figure 79. It's on -- it takes up the whole page along
24 with its notes.

25 MR. ISAACSON: And I would like to mark this as

1 Lee Demonstrative 3.

2 THE COURT: All right.

3 BY MR. ISAACSON:

4 Q And here, Figure 79 is a summary of key differences
5 between digital advertising types for advertisers that
6 you -- this is something you prepared; right?

7 A Yes.

8 Q Okay. And over in targeting capabilities in the
9 right-hand column, you'll see display has user: Interests,
10 demographics from browsing history. And that instream video
11 has user: Interests, demographics from browsing history.
12 And native has users: Interests, demographics from browsing
13 history for content recommendations. User: Interests,
14 demographics for social. Native for sponsor listing says
15 users: Interest, demographics from browsing history. And
16 apps has users: Interests, demographics from device
17 tracking dependent on user opt-in.

18 Those are all targeting capabilities for the upper
19 part of the funnel; aren't they?

20 A I think they can be useful, both in the upper parts of
21 the funnel, potentially elsewhere in the funnel as well.

22 Q All right. There's mention -- I'll just touch on this
23 topic while we see these terms, CPC and CPM, which you
24 mentioned in your testimony that -- and exchanges can
25 convert bids submitted on a cost-per-click basis into

1 publisher payments on a cost-per-impression basis; can't
2 they?

3 A I'm aware advertiser ad networks can, but ad exchanges,
4 I don't recall to the extent to which they facilitate that.

5 Q All right. Ad networks can convert bids submitted on a
6 cost-per-click basis into publisher payments on a
7 cost-per-impression basis?

8 A Advertiser ad networks like Google Ads can perform
9 that.

10 Q Right. And to the extent that exchanges can do that,
11 that means advertisers can submit bids on a cost-per-click
12 basis, and then the payments can be made on a different
13 basis?

14 A I don't quite follow. I'm not sure quite how that
15 would work.

16 Q All right. Now, when you're talking about open-web
17 display advertising, you've said it's distinct and valuable
18 as opposed to other types of display ads; right?

19 A It's distinct from other types of digital advertising.

20 Q Okay. And if it's distinct, that informs the extent to
21 which customers would be able to substitute away from it; is
22 that your opinion?

23 A It informs the extent to which customers would be
24 willing to pay more than competitive prices for the tools
25 used to transact those forms of advertising.

1 Q Well, is that -- and I appreciate you telling me that,
2 that if a product is distinct from other products, that will
3 explain why customers would be willing to pay more than
4 competitive prices for that product; is that right?

5 A Can you repeat that, please?

6 Q Sure.

7 If a product is distinct from other products, that
8 will explain why customers would be willing to pay more than
9 competitive prices for that product?

10 A It can inform that, yes.

11 Q And is that the same thing as saying that if a product
12 is distinct, that informs the extent to which customers
13 would be able to substitute away from it?

14 A Well, I think distinct incremental value that a product
15 provides can inform an understanding of how substitutable
16 those products are from alternatives.

17 Q All right. And if we look into your Demonstrative O
18 quickly again, distinct features and market definition,
19 that's what we're talking about here. When you're saying
20 distinct, we're talking about distinct features of products
21 for market definition purposes?

22 A For products within a market compared to alternatives
23 outside the market, distinct features can inform closest of
24 substitution.

25 Q And just while we're on it, industry recognition would

1 refer to Google documents, other industry documents, and
2 public industry sources like EMARKETER; right?

3 A It includes those kinds of sources.

4 Q And going back to this distinct point, I'm trying to
5 understand this.

6 If Coca-Cola is distinct in the minds of consumers
7 from Pepsi or other colas, does that mean customers will be
8 willing to pay prices above competitive levels for a Coke?

9 A I didn't study soft drinks, but not in the zone. I'm
10 looking at all features. That isn't, alone, sufficient to
11 render that conclusion in my opinion.

12 Q That is what?

13 A That alone isn't sufficient on its own.

14 Q Right. But if we just accept for the premise of this
15 question that there are a lot of consumers who think Coke is
16 distinct from Pepsi or other colas, that would be a factor
17 that would cause you to say that customers would be willing
18 to pay prices above competitive levels for a Coke; right?

19 A Well, economists recognize product differentiation can
20 be a source of market power or can be a source of charging
21 higher prices. But, again, the analysis requires looking at
22 more factors.

23 Q Right. So when we're looking at product
24 differentiation, you can just -- you can have -- I mean, if
25 a whole bunch of consumers think a Chiquita banana generally

1 tasks better than a Dole banana, that's product
2 differentiation?

3 A It's not binary, but it is -- differentiation matters
4 in a degree and the sense in which you deliver incremental
5 value, other considerations to bear in mind.

6 Q Right. And if consumers think -- if there's a whole
7 chunk of consumers -- millions of consumers who think the
8 Big Mac is distinct from the Whopper --

9 THE COURT: You must be getting hungry.

10 MR. ISAACSON: Yeah. That happens to me about
11 this time. Yeah.

12 BY MR. ISAACSON:

13 Q -- that could result in the Big Mac and Whopper being
14 in separate markets because they're distinct under this
15 analysis; correct?

16 A No, not on its own.

17 Again, market definition doesn't just look at the
18 extent -- market definition also has to be appropriate for
19 the question of interest here.

20 Q Okay. But let me then be specific.

21 This factor of distinct features --

22 A Yeah.

23 Q Right. Distinct features refers to -- would include
24 whether customers think the Big Mac is distinct and tastes
25 different from the Whopper, that would be a distinct

1 feature?

2 A It could be. One needs to understand how it
3 contributes to the ability to charge prices significantly
4 above competitive levels for market definition.

5 Q And if a higher quality ad exchange -- I'm sorry.

6 Is a higher quality ad exchange that generates
7 significantly higher publisher revenue than another ad
8 exchange a distinct product from that lower quality ad
9 exchange?

10 A Well, as I mentioned, differences in yield and
11 monetization is a former product differentiation, but those
12 are both ad exchanges in your hypothetical for open-web
13 display. They're both ad exchanges. So they're very
14 similar on some dimensions, could be differentiated in other
15 dimensions.

16 Q So for the distinct features analysis, the distinct
17 features in your market definition, that term there that I'm
18 pointing to the slide, the -- you would look at -- you could
19 even look at, well, gee, there's one ad exchange that's
20 doing so much better than the others, it's distinct for
21 market definition purposes?

22 A I'm looking at the totality of evidence, which includes
23 dimensions along which products are differentiated from
24 alternatives. Here, for market definition, the features are
25 of a set of products in a candidate market compared to

1 alternatives outside of the market.

2 Q When you're deciding what's inside the market and
3 outside the market, one factor can be that one ad exchange
4 is just a lot more -- is doing a lot better job for its
5 customers than the other ad exchanges?

6 A These factors are used to perform the HMT, and the HMT
7 is the economic framework I used when evaluating whether a
8 relevant product market contains enough products.

9 Q Right. HMT, the hypothetical monopolist test, and
10 you're saying that under the hypothetical monopolist test,
11 that a product, such as an ad exchange, which is doing a
12 superior job -- a significantly superior job to the other ad
13 exchanges, for market definition purposes, those could be
14 distinct features, and then you would move on to industry
15 recognition?

16 A I didn't follow your question.

17 Q All right.

18 A I'm not sure of that characterization.

19 Q I'll move on.

20 For substitution purposes, in this case, you have
21 not evaluated whether customers have reasonable substitutes.
22 Instead, the term that you use is close substitutes; right?

23 A I did use close substitutes to be precise that I'm
24 referring to the HMT when evaluating substitution.

25 Q Right. You think reasonable substitutes is too

1 imprecise to use?

2 A If you're referring to my deposition, and I said I want
3 to use close substitutes to be precise in what I mean.

4 Q Now, with respect to the tools in your market, you only
5 include publisher ad servers, ad exchanges and advertiser ad
6 networks in each of the relevant markets if they are capable
7 of transacting what you define as open-web display ads;
8 right?

9 A Yes.

10 Q And I just want to clarify this.

11 At the start of your testimony yesterday, you said
12 it was your opinion that publisher ad servers and exchanges
13 and advertiser ad networks are all well-defined appropriate
14 relevant antitrust product markets.

15 What you mean by that is that publisher ad
16 servers, ad exchanges and advertiser ad networks capable of
17 transacting open-web display ads are relevant antitrust
18 markets; right?

19 A Correct.

20 Q Okay. You don't have an opinion whether there are
21 antitrust markets for publisher ad servers, ad exchanges and
22 advertiser ad networks generally without that limitation to
23 open-web display; right?

24 A I'm not expressing an opinion for those other markets.

25 Q Okay. And when we say capable of transacting open-web

1 display transactions, those are transactions between
2 advertisers and publishers; right?

3 A Well, there's one caveat, but generally that's true.

4 With publisher ad servers, they perform other
5 functions for open-web display publishers that are part of
6 the reasons why they're valued by publishers.

7 Q Right. But when you're referring to transacting
8 open-web display ads, you're talking about transactions
9 between advertisers and publishers?

10 A Yes.

11 Q The tools in your markets are capable of transacting
12 more than open-web display; right? They're capable of
13 transacting in-app ads, connected TV, instream video, native
14 ads?

15 A Some of these tools have those additional functions.

16 Q The -- you have not done an analysis in the ad exchange
17 market, for example, as to which ad exchanges are capable of
18 transacting what type of ads?

19 A I've looked at some exchanges. AdX, I'm aware, can
20 transact, for example, in-app ads.

21 Q All right. So you know that AdX can transact ads for
22 in-app, connected TV, instream video and native ads; right?

23 A As I recall, for video transaction for AdX are a very
24 small part of overall transactions, the majority of open-web
25 display. But I'm aware it can transact different types of

1 advertising.

2 Q And there's upwards of over 100 ad exchanges these
3 days; isn't that right? Or at the end of 2022?

4 A I've seen numbers that indicate -- across all types of
5 digital advertising, there are many ad exchanges.

6 Q And as part of your work in this case, you've not
7 attempted to identify, other than AdX, which exchanges
8 transact in what types of ads?

9 A I don't recall all the analyses in my reports, whether
10 I discussed the other functions of other exchanges that
11 transact open-web display. I can look in my reports but I
12 don't have that off the top of my head right now.

13 Q Okay. Your markets for tools include tools that are
14 capable of transacting ads that appear on owned-and-operated
15 properties; right?

16 A Can you repeat your question?

17 Q Your markets include tools that are capable of
18 transacting ads that appear on owned-and-operated
19 properties; don't they?

20 A Like Google Ads, that's correct.

21 Q Okay. And my colleague says that you've said that a
22 majority of advertising transactions are open-web display
23 advertising. Is that something -- is that your view?

24 A I'm sorry. Say that again.

25 Q Is it your view that a majority of AdX transactions are

1 for open-web display advertising?

2 A AdX -- I recall looking at that, that most are open-web
3 display. I mean, for non-O&O, most are open-web display.

4 Q For non-O&O?

5 A Well, AdX -- yes, that's my recollection.

6 Q Okay. And you agree that DFP can transact forms of
7 advertising other than open-web display ads; right?

8 A Can you repeat? Sorry.

9 Q You agree that DoubleClick for Publishers, DFP, could
10 transact forms of advertising other than open-web display
11 ads, such as apps, connected TV?

12 A I'm aware of it's, yes, app and video -- instream video
13 capabilities.

14 Q And returning to exchanges, at least at the time of
15 your deposition, you didn't know a single exchange that only
16 transacts in open-web display advertising; right?

17 A I didn't recall at the time.

18 Q And at the time of your deposition, you had not
19 analyzed the ability of any ad tech tools to monetize
20 inventory other than open-web display ads; correct?

21 A Any other ad exchanges, you said?

22 Q Any ad exchange -- actually, of any ad tech tools. You
23 didn't analyze the ability of any ad tech tools -- well,
24 I'll stick with exchanges.

25 You had not analyzed the ability of any exchanges

1 to monetize inventory other than open-web display ads;
2 correct?

3 A Again, as I mentioned, I looked at AdX as capabilities,
4 but I focused on ad exchanges that could transact open-web
5 display in my analyses.

6 Q So if you've got an exchange, for example, that
7 transacts in apps, connected TV and open web, you don't know
8 what publishers take into account when deciding on an ad
9 exchange about the importance of it can do apps, it can do
10 connected TV, it can do open web?

11 A Publishers can use many ad exchanges and send different
12 types of digital advertising transactions through different
13 exchanges.

14 Q Yes. But you don't know -- when they're looking at
15 what the exchanges can do, apps, connected TV, open web, et
16 cetera, you don't know how publishers make those choices?

17 A I think I described why publishers value yield, and
18 they would consider yield for different advertising sources
19 when sending. I mean, they use multiple exchanges.

20 Q All right. But if an exchange -- if hypothetically
21 there's one exchange that has high yield -- higher yield for
22 apps and higher -- and lower compared to another exchange
23 but not as good on open web, so there's differences between
24 their performances on open web and apps, you don't know how
25 publishers evaluate that?

1 A A publisher can split inventory types. So, like, with
2 publisher ad servers, publishers can use a different video
3 ad server like Disney does, but Disney also use DSP for
4 open-web display. So publishers can use tools that are
5 suited for particular forms of digital inventory if they
6 have multiple forms of digital inventory.

7 Q So you don't actually know whether publishers go about
8 it the way you're suggesting, that they're looking at this
9 piece of this exchange and that piece of an exchange as
10 opposed to saying this exchange's overall performance is
11 best, I'll go with that?

12 A So I just referenced like a deposition from Disney
13 explaining why they went with an in-house video server,
14 but --

15 Q I'm talking about ad exchanges now.

16 You don't know how publishers make their choices
17 between exchanges based on overall performances or cutting
18 them up into their performances for these different things,
19 you don't know that; do you?

20 A So publishers that have just open-web display don't
21 fall in that bucket. For those that do, this is what a
22 publisher ad server helps them manage optimize yield across
23 their inventory.

24 Q I'm just going --

25 THE COURT: All right. The question's been asked.

1 MR. ISAACSON: Okay. I want to ask the same
2 question about advertisers.

3 BY MR. ISAACSON:

4 Q You don't have opinions about what advertisers do or do
5 not consider when making their decisions amongst ad
6 exchanges; correct?

7 A I think for a specific advertiser, it's hard to
8 definitively state everything they consider or don't
9 consider.

10 Q And am I right that when you say an exchange -- if an
11 exchange is running auctions for display ads for open web
12 and apps, the analogy you would draw to that is a gas
13 station that's selling gas and potato chips, that's the
14 analogy that you're advancing?

15 A I'm sorry. Can you repeat your question?

16 Q All right. When you were talking about gas stations
17 selling gasoline and potato chips, is the analogy that
18 you're -- the comparison you're making to an ad exchange
19 that has functionality for apps as well as open web?

20 A I think that analogy was helpful to understand that
21 products can have multiple functions, and when computing
22 market shares to inform market power over a particular need,
23 it's important to understand what are the customers seeking
24 from that product. If they're seeking gas, probably would
25 want to use gasoline sales and not potato chip sales for

1 market shares. If many open-web publishers don't have other
2 forms of digital advertising, including app sales and market
3 share calculations doesn't really speak to the extent to
4 which that ad exchange serves those needs.

5 Q I guess my question's a little simpler.

6 Do you think that your gas station analogy or
7 gasoline and potato chips is a good comparison to the ad
8 exchanges having multiple functionality, such as apps and
9 open web?

10 MS. WOOD: Objection. Asked and answered. And
11 compound.

12 THE COURT: I'm going to sustain the objection.

13 MR. ISAACSON: Okay.

14 BY MR. ISAACSON:

15 Q By the time of your deposition, you did not recall any
16 Google documents reporting market shares that use the term
17 open-web display advertising; correct?

18 A I didn't recall a document using those four words in
19 that order also computing market shares.

20 Q And by the time of your deposition, you did not recall
21 any third-party documents that used the term open-web
22 display that report market shares for any ad tech products?

23 A Again, using those four words in that order with market
24 shares, I didn't recall.

25 Q By the time of your deposition, you don't -- you did

1 not recall seeing any documents which have market shares and
2 use the term open-web display advertising?

3 A Can you repeat your question?

4 Q Sure.

5 By the time of your deposition, you don't recall
6 seeing any documents which have market shares and use the
7 term open-web display advertising; correct?

8 A I recall documents with those four words, but not
9 combining those four words with market shares.

10 Q All right. You don't know whether, before this case,
11 before your work, anyone has ever tried to compute market
12 shares for markets that use the term open-web display
13 advertising; right?

14 A I don't know that.

15 Q As far as you know, you're the first person to ever
16 calculate market shares for markets for open-web display
17 advertising?

18 A I don't know if anyone has computed shares using those
19 four words.

20 Q All right. And when you talk about market definition
21 and industry recognition, does it seem relevant to you that
22 you're unaware of anyone ever doing that market share
23 calculation before?

24 A Market shares are used to inform market power, which is
25 separate from market definition.

1 Q All right. Well, is it -- then I'll ask the same
2 question about market power.

3 Does industry recognition have anything to do with
4 market power?

5 A Well, the reason why industry recognition can be
6 helpful and something useful to consider in the totality of
7 evidence is it suggests where any short distance perceived
8 competition could be more intense, products that customers
9 view as more or less substitutable. Even if they don't use
10 the exact words, it's the features in question, the needs
11 that are being served that are relevant. And I've seen many
12 documents talking about display advertising on the open web,
13 even the words open-web display advertising to describe
14 features that are offered by these products.

15 Q But not with the word market?

16 A I'm sorry. Your question earlier was about market
17 shares plus those four words.

18 Q Yes. And I'm just following up where you've said I've
19 seen open display -- open web and display advertising.

20 You haven't seen an open-web display advertising
21 market described?

22 A I'm not defining an open-web display advertising
23 market.

24 Q You haven't seen any market where the term open-web
25 display advertising is used in conjunction with the name of

1 that market?

2 A I don't recall sitting here.

3 Q All right. You discussed a document with counsel, so
4 now we're in your white binder. 657. PTX 657. And I
5 just --

6 THE COURT: This is in evidence, I believe; right?

7 MR. ISAACSON: Yes.

8 BY MR. ISAACSON:

9 Q And at page 350, this is a page you didn't discuss but
10 that's cited in your report. All right. And this says:
11 "The sell-side display business focuses on 22 percent of
12 page views that are addressable and run ads."

13 Addressable, do you understand means that Google
14 would have the opportunity to place ads there?

15 A My understanding it's addressable or what their
16 sell-side ad tech products are competing for.

17 Q And the competitors that are listed here include
18 Google, Facebook, Amazon and others over there on the left;
19 do you see that?

20 A Those are referring to the owned-and-operated Facebook
21 and Amazon and Google properties.

22 Q Right. And the -- and in the speaker notes you'll see,
23 unaddressable includes blacklisted sites, adult and
24 gambling.

25 You're not going to put ads -- you're not going to

1 put ads there; right?

2 A That's what it says.

3 Q And then other competitors.

4 So the other competitors are part of the
5 unaddressable category because you're not going to put
6 ads -- Google's not going to put an add on Facebook or on
7 Amazon for its advertisers; correct?

8 A Google can't, it's my understanding, place ads on
9 Facebook's properties or Amazon's website.

10 Q And the bottom piece -- the last line is: "The bottom
11 piece is addressing and running 22 percent of all market."
12 And the market that's up there is over the lower right-hand
13 corner, the competitive market for ad monetization; right?

14 A That's what it says.

15 Q Now, you know that Amazon, at one point, changed from
16 using DFP to its own proprietary ad server; right?

17 A I recall that.

18 Q And that was in approximately 2015; correct?

19 A I don't remember the exact date.

20 Q All right. But when that happened, prior to -- when
21 Amazon was using DFP, Amazon was part of your publisher ad
22 server market; right? Was a customer in your -- was a
23 customer -- well, prior to that launch, Amazon was using DFP
24 to sell ads on Amazon; right?

25 A I don't recall all the details, but if Amazon was using

1 DFP to sell open-web display banner ads on a site, then
2 those -- it would be a customer of DFP's open web. Yeah, a
3 customer of DFP.

4 Q And then all of that activity moved out of your market
5 when Amazon had its own proprietary ad server; right?

6 A I'm not quite sure I follow what you mean by move out
7 of the market.

8 Q Let me try this question then.

9 Do you agree that if -- that Amazon could shift
10 its current facilities to provide a publisher ad server if
11 it wanted to?

12 A "Could" is pretty broad. I've seen documents
13 indicating it would be very difficult for them to do so.

14 Q Do you think -- you saw documents that it would be
15 difficult for Amazon to create a publisher ad server?

16 A I've seen Facebook documents talking about how it's
17 very difficult for them to do so and how Amazon had decided
18 to build on top of Google's rails due to Google's DFP.

19 Q Now, when you said you saw difficult -- documents
20 showing Facebook had difficulty, are you referring to that
21 Facebook would have difficulty building the publisher ad
22 server or building the publisher ad server and then
23 competing successfully?

24 A I think it was referring to building a successful
25 publisher ad server, gaining traction with open web

1 publisher customers.

2 Q All right. And do you agree that if Amazon can shift
3 its current facilities to provide a publisher ad server,
4 that it should be included in the relevant market -- your
5 relevant market for publisher ad servers?

6 A It was my understanding Amazon's publisher ad server
7 focused on native ads, particularly retail ads that are
8 showed in Amazon's owned-and-operated.

9 The extent to which it can facilitate open-web
10 display ads, I haven't seen evidence that it would be able
11 to do that rapidly.

12 Q So set aside the factual premise.

13 If, hypothetically, Amazon could readily shift its
14 current facilities to provide a publisher ad server, should
15 Amazon be included in your relevant market for publisher ad
16 servers?

17 MS. WOOD: Objection. Vague. Incomplete
18 hypothetical.

19 THE COURT: I think it's too vague a question.
20 I'm going to sustain the objection.

21 BY MR. ISAACSON:

22 Q Okay. Do you agree that the current ad tech tools that
23 have the ability to transact open-web display ads also can
24 shift what they are doing to in-app ads?

25 A Can you repeat your question?

1 Q They could -- so if you're transacting in both types of
2 ads -- so if an exchange is transacting in in-app ads and in
3 open web ads, does that exchange then have the ability to
4 say we're going to -- we're now going to transact more open
5 web ads and less in-app ads?

6 THE COURT: Aren't you asking for expertise in
7 computer science or in how you design these various servers?
8 This man is an economist.

9 MR. ISAACSON: I don't think so. I'll move on if
10 you want, Your Honor.

11 THE COURT: Move on.

12 BY MR. ISAACSON:

13 Q The Washington Post has both a web page and an app.
14 You know that; right?

15 A Yes.

16 Q And so under your market definitions, a display app
17 appearing on the Washington Post web page is included in
18 your market share calculations, but the very same ad
19 appearing in the Washington Post app served by the same ad
20 tech tools is excluded from your market share calculations;
21 do I have that right?

22 A It's a different impression. But, yes, app impressions
23 are not included in these open-web display impression market
24 shares.

25 MR. ISAACSON: All right. And if we could look at

1 Lee Figure 8. I would make this Demonstrative Number 4.

2 Yes. You see Lee Demonstrative 4.

3 BY MR. ISAACSON:

4 Q Now, this is Figure 8 of your report. Video ads that
5 appear in that upper right-hand corner, display Adspace on
6 this website, are included in your market share calculation;
7 right?

8 A So if there's an outstream video ad in the same box
9 that a display banner ad can be shown, it is considered as
10 an open-web display impression.

11 Q Right. And this is an illustration of that. If a
12 video runs in that display Adspace, that would be an
13 outstream video?

14 A Definition of an outstream video is a video content put
15 into a display banner ad sort of slot like that.

16 Q All right. And if the very same video -- the same
17 video runs in the slot for digital instream video ads in
18 your diagram, that would be outside of your market?

19 A I mean, there's a different format, it's a different
20 location, and it plays pre, mid or post roll. So the -- I
21 mean, it would be a different ad creative; right?

22 Q My question is: If the same video runs in the box for
23 the digital instream video ad as we were talking about was
24 running the display Adspace, it would be outside your
25 market?

1 A The advertisements aren't in or out of the market, but
2 for competing market shares, instream video ads are not
3 included in open-web display market shares.

4 Q And when the --

5 A I'm sorry. The market shares for open-web display
6 transactions through these tools.

7 Q All right. And so now a different question.

8 With the New York Times switch from proprietary ad
9 servers to DFP in 2015, before it switched to DFP, it was
10 not in your ad server market, and then when it switched to
11 DFP, it was; right?

12 A What do you mean by -- can you clarify what product
13 you're saying is in or out of the market?

14 Q The New York Times proprietary ad server that it had,
15 and then it stopped using that and it moved to DFP; do you
16 remember that?

17 A Yes.

18 Q So when it had its own proprietary ad server that was
19 not included in your -- those impressions or transactions
20 would not be included in a market share calculation in your
21 publisher ad server market, but after they started using
22 DFP, it was?

23 A So DFP, transactions are included. But proprietary
24 in-house publisher ad servers not available to other
25 customers, those transactions are not included in market

1 share -- in those market share calculations.

2 Q All right. I want to ask you some questions about the
3 conduct.

4 MR. ISAACSON: And if we could put on the screen
5 paragraph 12-3 of your report. This is on page 3. This is
6 part of your summary of your report.

7 BY MR. ISAACSON:

8 Q Are you with me, sir?

9 A I am.

10 Q And I assume you're very familiar with this? It's from
11 the introduction.

12 And you list five pieces of conduct, all of which
13 you referred to in your direct testimony.

14 The first was providing unrestricted access to
15 Google's advertiser demand exclusively to ad -- to its AdX
16 ad exchange and denying comparable access to rival ad
17 exchanges.

18 Now, for this conduct, you mean that AdX had
19 access to Google Ads customers and did not provide
20 comparable access to customers to rival -- to its customers
21 on -- for rival ad exchanges; right?

22 A I'm sorry. Can you repeat that your position?

23 Q Sure.

24 For this piece of conduct, you mean that AdX had
25 access to Google Ads customers, and they didn't provide

1 those customers comparable access to rival ad exchanges?

2 A So this is referring to conditioning unrestricted
3 access to Google Ads on the use of AdX and not providing
4 similar --

5 Q And when you used the term "conditioning," what you
6 mean is that Google -- that AdX is not giving its customers
7 access to rival ad exchanges?

8 A Did you say AdX?

9 Q Yes. Well, just say -- we can say it's Google if you
10 like.

11 Google is not providing AdX customers -- Google
12 Ads' customers comparable access to rival ad exchanges?

13 A The conduct refers to Google Ads not bidding for all
14 impression types.

15 Q Right. And that's the condition?

16 A On other rival exchanges.

17 Q So, now, to avoid this anticompetitive conduct, did
18 Google have to make all of the demand from its Google Ad
19 customers available to rival ad exchanges?

20 A I'm not opining on what Google should have to do or
21 should have done. My opinion is that this conduct harmed
22 competition relative to less exclusionary options.

23 Q To avoid harming competition, did Google have to make
24 all the demand from Google Ad customers available to rival
25 ad exchanges?

1 MS. WOOD: Objection. Vague. It also calls for a
2 legal conclusion.

3 THE COURT: The problem is, it's being asked for
4 the second time, and the witness wasn't able to answer it
5 the first time.

6 But he did say that he's not looking, it wasn't
7 within his job to determine what would -- what would solve
8 the problem; he's just addressing the problem.

9 MR. ISAACSON: I'm -- that's why I'm asking him
10 about defining the problem. I'm not asking him to solve the
11 problem. So I want to understand the problem. So is the
12 problem -- I want to know how much of the demand he's
13 talking about. Is he talking about all of it or some part
14 of it?

15 THE WITNESS: So my opinion is that what it's done
16 has harmed competition relative to less exclusionary --
17 which could include bidding more widely on more impression
18 types. I'm not expressing an opinion, however, exactly on
19 what Google should have done.

20 BY MR. ISAACSON:

21 Q So if Google is trying to determine based on, you know,
22 the standards you're putting forth how to avoid
23 anticompetitive conduct, is there any guideline about how
24 much of this demand they're supposed to share?

25 MS. WOOD: Objection. Foundation. Calls for a

1 legal conclusion. And beyond the scope.

2 THE COURT: Yeah. I think that question is way
3 too vague.

4 Sustained.

5 BY MR. ISAACSON:

6 Q So is there a -- when Google shares -- if Google were
7 to share this advertiser demand as you described, should
8 Google be concerned about how much spend each of its
9 competitors are getting relative to the other comparators?

10 MS. WOOD: Same objection, Your Honor.

11 THE COURT: Sustained.

12 BY MR. ISAACSON:

13 Q Let's go to the second piece of conduct.

14 For this piece of conduct, you mean that DFP had
15 access to real-time bids from AdX, and Google did not
16 provide comparable access to rival publisher ad servers;
17 right?

18 A Yes.

19 Q And to provide comparable access to real-time bidding
20 on AdX to rival ad servers, DFP would have had to allow
21 rivals to submit bids into DFP to compare to AdX bids;
22 correct?

23 A You used rivals, and then -- can you just repeat your
24 question, please?

25 Q Sure.

1 To provide comparable access to real-time bidding
2 on AdX to rival ad servers, DFP would have had to -- have
3 had to allow rival ad servers to submit bids into DFP to
4 compare to AdX bids; right?

5 A I don't agree with that.

6 Q Okay. Let me -- maybe I'm getting it wrong. Let me
7 ask you to look at your deposition, which is in the white
8 binder.

9 A I'm sorry, which white binder?

10 Q Page 165.

11 A I don't have -- just one moment.

12 MS. WOOD: He's got the white binder.

13 THE WITNESS: What page again, please?

14 BY MR. ISAACSON:

15 Q Page 165, line 3.

16 And I'm trying to understand your concept here,
17 sir.

18 The question's asked at line 3: "So, in general,
19 to be less exclusionary, Google would have had to allow
20 rival ad exchanges to submit real-time bids along AdX; is
21 that right?" So -- and you answer: "So allowing ad
22 exchanges -- rival ad exchanges to submit real-time bids
23 into DFP to evaluate it alongside AdX represents a form of
24 less exclusionary conduct."

25 So in order to have that less exclusionary

1 conduct, you would have to allow rivals to submit bids
2 alongside the AdX bids; do I have that right?

3 A It's my understanding this is referring to the third
4 conduct, not the second conduct.

5 Q Okay. Well, then let me ask you this about the second
6 conduct.

7 You would have to do something to the technology
8 to provide access to real-time bids if you wanted to change
9 that?

10 MS. WOOD: Objection. Foundation.

11 THE COURT: Again, if he knows, because I think
12 this, again, goes into -- I am assuming you're going to have
13 some technology person to talk about this.

14 MR. ISAACSON: Yeah.

15 THE COURT: All right.

16 MR. ISAACSON: He knows enough to have answered
17 this question before, and this is the only question I'm
18 asking about.

19 THE COURT: Well, if it's been previously asked
20 and answered, then find out where it is.

21 MR. ISAACSON: In his deposition, Your Honor.

22 THE COURT: No, but, I mean, he's -- Dr. Lee is
23 saying that this particular section doesn't have to do with
24 Number 2.

25 MR. ISAACSON: So I've moved away from that part

1 of the deposition. I've just asked him the question with
2 respect to the second piece of conduct.

3 BY MR. ISAACSON:

4 Q You agree that Google would have to make changes to its
5 ad tech to provide access to real-time bids from its
6 exchange to rivals; right?

7 A Some change would be necessary for AdX to submit
8 real-time bids to rival publisher ad servers, as it's not
9 doing that currently.

10 Q All right. The third piece of conduct has been
11 referred to in this case as first and last look.

12 And for this piece of conduct, you mean that only
13 AdX could get a first look or last look as a result of
14 Google's Dynamic Allocation; right?

15 A Historically, it was provided with these advantages.

16 Q And in order to -- in order to -- in order to not have
17 this anticompetitive conduct, Google would have had to
18 provide equal access to its rival exchanges in the Dynamic
19 Allocation; right?

20 A Again, I'm not opining what needed to have happened,
21 but what happened harmed competition relative to less
22 exclusionary alternatives.

23 Q All right.

24 THE COURT: That didn't answer the question. Try
25 it again.

1 BY MR. ISAACSON:

2 Q Let me try putting it this way.

3 The converse of first look and last look is you
4 give everybody an equal look?

5 A That would represent -- I mean, I'm not quite sure what
6 you mean by "equal look." I think one form is described in
7 what we just read as less exclusionary is allowing rival ad
8 exchanges to bid in real time alongside AdX without
9 providing, for example, AdX last look.

10 Q All right. So the fourth piece of conduct, the unified
11 pricing, by this conduct, you are saying that Google
12 impaired the ability of its customers to work with
13 competitor ad exchanges, right, within Google's DFP product?

14 A Yes.

15 Q Publishers could set any price floors outside DFP that
16 they wanted. The impairment of the ability to work with
17 rival ad exchanges that's referred to here is referring to
18 conduct within DFP; right?

19 A It's referring to removal of a feature that was present
20 within DFP.

21 Q Now, the fifth piece of conduct.

22 You agree that the -- this is -- you refer to the
23 AdMeld acquisition.

24 What you say is: "Acquiring an emergence
25 competitor AdMeld and eliminating it as a competitive threat

1 to Google's AdX and DFP products."

2 A Yes.

3 Q The -- you agree that after the AdMeld acquisition,
4 Google integrated some of AdMeld's features into DFP,
5 including the AdMeld functionalities relating to yield
6 management?

7 A That's my understanding.

8 Q All right. The only functionality from AdMeld that you
9 have identified that was not incorporated into a Google
10 product was the provision of real-time bids into rival
11 publisher ad servers?

12 A That is the feature that I identify as being removed.

13 Q You did not analyze whether the AdMeld acquisition was
14 anticompetitive apart from Google not incorporating that
15 real-time bidding technology; right?

16 A I opined it also harmed competition by eliminating an
17 ad exchange competitor to AdX. AdMeld had real-time bidding
18 functionality at the time, and Google documents indicated as
19 a direct competitor to AdX.

20 Q Well, if the AdMeld acquisition had gone forward and
21 Google had incorporated the real-time bidding into
22 third-party exchanges, you don't have an opinion whether the
23 acquisition was anticompetitive; correct?

24 A That's not correct.

25 Q All right. Can I ask you to look at your deposition at

1 page 294. And you have to start at line 22 at the bottom.
2 There's a question at line 22 at page 294; do you see that?

3 A Are you on -- yes. Yes.

4 Q Okay. And at line 22, page 94, you were asked the
5 question, continuing on the next page: "You did not conduct
6 a separate analysis of the acquisition of AdMeld apart from
7 Google's failure to incorporate real-time bids into rival
8 publisher ad servers; is that correct?"

9 And then you said: "So my analysis incorporated
10 the removal of the real-time bids into rival publisher ad
11 servers as part of my analysis."

12 And then you were asked the question: "And so
13 returning to my question, if the AdMeld acquisition went
14 forward and Google had incorporated real-time bidding into
15 third-party exchanges, am I correct you would not have an
16 opinion whether the acquisition was anticompetitive?"

17 And you responded: "I did not conduct that
18 analysis, and I am not expressing an opinion whether it
19 would be or would not harm competition."

20 That was truthful testimony; wasn't it, sir?

21 A Yes. It's a different hypothetical. On the previous
22 page, I talked about the elimination of an ad exchange
23 competitor.

24 Q All right. The -- for the Court Items 1, 2 -- Items 1
25 and 2 you say -- you talked about comparable access.

1 What does comparable access mean?

2 A I'm sorry, where are you pointing to?

3 Q In the conduct, Items 1 and 2. Denying comparable
4 access to rival ad exchanges, denying comparable access to
5 rival publisher ad servers.

6 What does comparable access refer to?

7 A So one refers to restricting the set of impressions --
8 or transaction types that Google Ads bids on in rival ad
9 exchanges; and two, it refers to real-time bids being
10 provided to DFP from AdX but not to rival publisher ad
11 servers.

12 Q Does comparable access include rival comparable access?

13 A Those are what I'm referring to. The restrictions on
14 bidding Google Ads is not bidding as widely and for a
15 limited set of impressions or transaction types, and then
16 the provision of real-time bids.

17 Q All right. Would that include -- well, comparable to
18 what? When you say comparable access, comparable to what?

19 MS. WOOD: Objection. Asked and answered.

20 THE COURT: The word comparable is an ordinary
21 English language word. I understand what that means. I
22 also understand what you're driving at is whether or not
23 what would have to be done to provide comparable access.
24 That's a different question.

25 MR. ISAACSON: And I appreciate when the Court

1 says that you understand what I'm driving at because then I
2 can move on.

3 THE COURT: All right.

4 BY MR. ISAACSON:

5 Q Now, you -- turning to the subject of market power.

6 You are not giving an opinion as to whether Google
7 possessed or did not possess substantial market power in any
8 relevant market before 2015; correct?

9 A I am not.

10 Q And you said in your testimony that Google has
11 possessed market power in each of the relevant markets in
12 recent years and likely since at least 2015; do you remember
13 that?

14 A Yes.

15 Q What does "recent years" mean?

16 A Without giving you a precise timeline, but likely since
17 at least 2015 it's possessed its power, and it has --

18 Q Well, I understand the likely period. The likely since
19 2015.

20 You say they have possessed market power in recent
21 years. What does "recent years" mean?

22 A I'm not providing a precise date.

23 Q All right. Can we look at Lee Figure 62, which is on
24 page 243 of his report.

25 MR. ISAACSON: I'd like to mark this as Lee

1 Demonstrative 5.

2 BY MR. ISAACSON:

3 Q This is a figure you prepared. The Google exclusionary
4 conduct timeline. These are the five pieces of conduct that
5 you've -- in your report that you put out a timeline; right?

6 A Yes.

7 Q And the AdMeld acquisition takes --

8 MR. ISAACSON: Well, Mr. Spalding is good at this.
9 Maybe he can draw a line up from the end of 2014.

10 BY MR. ISAACSON:

11 Q So before that black line in 2014, you have no opinion
12 about Google having market power or not market power;
13 correct?

14 A I'm not expressing an opinion on that.

15 Q And you don't have an opinion -- so after -- beginning
16 in 2015, you say Google likely had market power, but you're
17 not able to establish the date on which your opinion is that
18 they do have market power; right? Or substantial market
19 power.

20 A Substantial sustained market power protected by
21 significant barriers to entry.

22 (Reporter interrupted for clarification.)

23 THE WITNESS: Barriers to entry.

24 BY MR. ISAACSON:

25 Q And we can't -- we can't draw a line as to when you

1 have that opinion that they have that substantial market
2 power?

3 A I'm not drawing that line.

4 Q The -- and the AdMeld acquisition happens a number of
5 years before you have any opinion about Google's market
6 power; correct?

7 A The acquisition happened the end of 2011. It was
8 before that black line.

9 Q And it's also true, isn't it, that in this period
10 before you have any opinions about market power, that
11 Google's take rate, the Google AdX take rate for ad
12 exchanges was 20 percent?

13 A My understanding of the 20 percent take rate was
14 prior -- they were charging that average before.

15 Q All right. And in this time period before you allege
16 anything about market power, the Google Ads take rate was
17 about 14 percent; right?

18 A That 2014 experiment increased it from 14 to
19 15 percent. So 15 percent I think in 2014.

20 Q So let's get straight what you just said.

21 The experiment increased that take rate for a
22 sample in order to do an experiment. Google Ads didn't
23 actually increase its take rate from 14 to 15 percent; did
24 it?

25 A I saw email communications saying they went ahead with

1 a change.

2 Q So you think that Google Ads increased its take rate
3 from 14 to 15 percent based on that experiment?

4 A I've seen documents from Google indicating that they
5 did increase the average take rate. Google Ads is a bit
6 complicated because they charge a variable take, but I did
7 see documents that they did increase it to target a
8 15 percent margin.

9 Q Okay. On the subject of these markets, you agree that
10 the ad tech products in all three of your markets have
11 features common to two-sided markets; is that correct?

12 A So two-sided markets has a legal -- as I understand
13 might have a legal definition.

14 Q I'm -- all my questions are about economics, sir.

15 You agree that the ad tech products in your three
16 markets have features common to two-sided markets?

17 MS. WOOD: Objection. Compound.

18 THE COURT: I don't think that's compound.

19 Overruled.

20 THE WITNESS: So economics, as I discussed in my
21 reports, had different definitions for what a two-sided
22 market is. Many of these definitions share the trait that
23 it's a product that brings together two sides of -- two sets
24 of customers and exhibit indirect network effects.

25 Now, in that sense, it does have features common

1 with what economics calls two-sided markets.

2 MR. ISAACSON: All right.

3 THE COURT: Do you want a break?

4 MR. ISAACSON: Sure.

5 THE COURT: All right. Until 11:30.

6 (A recess was taken.)

7 MR. ISAACSON: Just one thing for the record, Your
8 Honor. I think I said PTX 1237 was admitted; it was not.
9 And, without an objection, we're moving PTX 1237 and 1237A.
10 It's another -- it was one of the charts.

11 THE COURT: That's fine.

12 MS. WOOD: No objection.

13 THE COURT: That's fine. It's in.

14 (Plaintiffs' Exhibit Numbers 1237 and 1237A admitted into
15 evidence.)

16 BY MR. ISAACSON:

17 Q Professor Lee, the hypothetical monopolist test.

18 In doing your work, you did not rely on any
19 consumer demand data in assessing whether the hypothetical
20 monopolist test could impose a SSNIP in any of the alleged
21 markets; correct?

22 A Could you explain what you mean by "consumer demand
23 data"?

24 Q Well, is consumer demand data a term that you're
25 familiar with that is sometimes used in connection with a

1 SSNIP?

2 A So you might be referring to customers like
3 substitution patterns.

4 Q However you want to define it.

5 Did you use any data on that in your hypothetical
6 monopolist test?

7 A So I did not directly use customer substitution
8 patterns. As I explained in my direct, there were issues
9 with relying on that in monopolization cases.

10 Q And I think you described that -- right. That -- you
11 said -- you explained how a SSNIP test is used in a merger
12 case, but said that would not be -- a SSNIP test would not
13 be appropriate for a monopolization case; is that right?

14 A That's not a correct characterization of what I said.

15 Q Is a SSNIP test sometimes used in monopolization cases?

16 A A particular form of a SSNIP test with a different
17 benchmark price is used in a merger case.

18 Q Did you say monopolization or merger?

19 A Merger case.

20 Q I'm asking about a monopolization.

21 A Sure.

22 Q Is a SSNIP test sometimes used in monopolization cases?

23 A So as I described, a SSNIP test is one way of referring
24 to the HMT.

25 Q Let me put it differently then.

1 Is a quantitative SSNIP test sometimes used in a
2 monopolization case?

3 A So that term is vague. I use quantitative evidence to
4 inform my HMT, but the kind of quantitative SSNIP that
5 directly uses information and customer substitution patterns
6 in a merger case is not what I am doing here.

7 Q And the -- you explain that a SSNIP test is not -- is
8 not appropriate in this case because the current price may
9 not be a competitive price; do I have that right?

10 A No, that's not correct.

11 Q Okay. Well, go ahead and explain then.

12 A So a version of the SSNIP or HMT that evaluates whether
13 a hypothetical monopolist would be able to profitably
14 increase prices over current price level, as is often done
15 in a merger, is not the appropriate test here in a
16 monopolization case where there's a concern that there's
17 already been an exercise of significant market power. The
18 HMT is conducted relative to a benchmark of competitive
19 prices.

20 Q I thought that's what I said, but okay.

21 THE COURT: No. No comments. Let's just move
22 along.

23 MR. ISAACSON: You're right. I'm sorry, Your
24 Honor.

25 BY MR. ISAACSON:

1 Q Did you consider looking at the 20 percent -- you know
2 the 20 percent take rate originated with DoubleClick, right,
3 not Google?

4 A It's my understanding that AdX charged 20 percent. I
5 don't recall the precise details of when that started.

6 Q All right. And you don't know of any suggestion that
7 that wouldn't have been a -- did you consider using that as
8 a benchmark price before Google was even on the scene?

9 A Those economists define competitive prices typically
10 measured by a firm's incremental or marginal costs. I
11 looked at other evidence to support my conclusion that
12 20 percent is super competitive for AdX.

13 Q Did you put any consideration into whether
14 DoubleClick's 20 percent take rate was above competitive
15 levels?

16 A I did not examine DoubleClick's take rate for its
17 earlier ad exchange product.

18 Q And after Google acquired DoubleClick, and Google had a
19 base of advertising customers for search ads that's been
20 described for the Court, Google kept the 20 percent take
21 rate, didn't it, of DoubleClick?

22 A Google maintained a 20 percent take rate on average for
23 AdX.

24 Q So on the subject of worldwide markets, do you agree
25 that defining a market broadly to include relatively distant

1 products graphically -- or geographic substitutes can lead
2 to misleading market shares?

3 A In some cases, a broader geographic market that does
4 include distance substitutes when competition is truly local
5 can lead to potentially misleading shares.

6 Q And narrowly defined geographic markets often more
7 would accurately reflect competition with close substitutes;
8 do you agree with that?

9 A I think it's case-specific.

10 Q Are you familiar with -- well, do you agree with the
11 market shares of different products and narrowly defined
12 markets are more likely to capture the relevant competitive
13 significance of those products?

14 A I would say it's case-specific.

15 Q All right. The -- and have you heard of something
16 called the smallest relevant market principle within market
17 definition?

18 A I have.

19 Q Okay. Would you explain that principle based on your
20 background?

21 A So, for example, for product markets, if one is using
22 those markets to compute market shares, a broader product
23 market risks including more distant substitutes. So when
24 you include those more distant substitutes, you may lead to
25 lower market shares for products within the market, and that

1 could lead to mistaken inferences of market power. So
2 that's why one wants to generally look at relevant product
3 markets that contain the product in question, plus the
4 closest competitive constraints. So in this case, not
5 putting in, like, walled-garden properties, for example, in
6 the relevant product markets.

7 Q So just to look at one of your charts -- I'm going to
8 go back to PTX 1237, which was just admitted.

9 This was worldwide impressions. We looked at this
10 before. So this is ad impressions around the globe.

11 Do you know how many languages are reflected in
12 these impressions?

13 A Typically many.

14 Q And even within the English language, this would
15 include Australian ads, UK ads and American ads; right?

16 A It would include impressions transacted around the
17 world.

18 Q And you're aware that there are differences in
19 regulatory frameworks across the United States -- across the
20 world that are applicable to ad tech; right?

21 A There are differences in regulatory frameworks.

22 Q So, for example, privacy regulatory frameworks would
23 vary around the globe; right?

24 A They can.

25 Q Okay. And if we can look at DTX 827, which is in your

1 binder.

2 THE COURT: Any objection to 827?

3 MS. WOOD: PTX?

4 MR. ISAACSON: DTX.

5 THE COURT: 827?

6 THE WITNESS: This is the black binder?

7 MR. ISAACSON: Yes, the black binder.

8 THE WITNESS: Can you please repeat the number?

9 MR. ISAACSON: 827.

10 MS. WOOD: Is this cited in Professor Lee's
11 report?

12 MR. ISAACSON: I do not have -- I can't say that
13 it is.

14 MS. WOOD: This is hearsay, Your Honor.

15 THE COURT: Yeah. Unless it's cited in a report,
16 I'm not going to accept it.

17 MR. ISAACSON: All right.

18 BY MR. ISAACSON:

19 Q In looking at whether prices are above competitive
20 levels, one relevant consideration are the features of the
21 products; is that right?

22 A Yes.

23 Q All right. And, for example, if we look at your
24 report -- opening your report, you use the term
25 quality-adjusted prices on a number of topics. So if you

1 look at page 137, the title at the top --

2 MR. ISAACSON: Maybe Matt can follow along with me
3 and put that on the screen.

4 BY MR. ISAACSON:

5 Q -- "hypothetical monopolist of publisher ad servers
6 would likely charge quality-adjusted prices above
7 competitive levels."

8 And then if you look at page 142, there's another
9 title "a hypothetical monopolist of ad exchanges would
10 likely charge quality-adjusted prices above a competitive
11 level."

12 If you look at page 157, the title "a hypothetical
13 monopolist of advertiser ad networks would likely charge
14 quality-adjusted prices above competitive levels."

15 If we turn to page 187, there's a title there.
16 "Google's DFP is able to maintain quality-adjusted prices
17 above competitive levels."

18 The -- for ad exchanges you talked about, those
19 take rates being super competitive, the 20 percent, you did
20 not look at quality-adjusted prices, you just compared ad
21 exchange fees of other ad exchanges to the AdX take rate;
22 correct?

23 A If I may explain. Quality-adjusted prices is a
24 shorthand that economists use to describe market power. It
25 can be exercised both via price --

1 THE COURT: Wait. Wait. Wait. Wait. Wait.

2 MR. ISAACSON: I'd like an answer to the question.

3 THE COURT: I think I'm going to allow the
4 witness, however, first define the term the quality-adjusted
5 price; all right?

6 THE WITNESS: Okay.

7 THE COURT: I can see it gives me two different
8 things.

9 Go ahead.

10 THE WITNESS: Thank you, Your Honor.

11 My report, Footnote 335, describes
12 quality-adjusted price as a shorthand that economists
13 oftentimes use to discuss how market power can be exercised
14 both via an increase in price above competitive levels, as
15 well as a reduction in quality below competitive levels.

16 So when I use that term throughout my reports, I'm
17 very clear. It's just saying that market power can either
18 be a price increase or a quality reduction. Because, all
19 else equal, if you hold -- if you reduce the quality, it's
20 as if the product gets worse for a customer. But in
21 general, there's no such thing as a single quality-adjusted
22 price in general because people differ in how much they
23 value quality. So I might not care very much, yeah.

24 THE COURT: Does it mean you're not just
25 considering quality in making the analysis?

1 THE WITNESS: So --

2 THE COURT: You're not considering good quality or
3 bad quality, you're factoring it out.

4 THE WITNESS: No. I am considering quality in all
5 of my analyses. Like, one of the reasons for Google's
6 market power is the relevant quality advantage it has,
7 oftentimes induced by the conduct that makes other products
8 worse.

9 So when I compare prices -- I am just comparing
10 the fees and the prices as is, but understanding where
11 that's coming from is important, and that's why I factor
12 quality in my analysis throughout.

13 BY MR. ISAACSON:

14 Q All right. And so let me see if we can define this.

15 In your direct testimony, you described that you
16 thought Google's conduct had reduced the quality of certain
17 ad tech products because customers weren't able to choose to
18 work with Google's rivals; right?

19 A I didn't follow your characterization.

20 Q So what you're talking about here and in your footnote
21 that you just referred to is that you'd look at price and
22 whether the conduct had reduced the quality; right?

23 A So this footnote talks about the exercise in market
24 power via prices or failing to maintain quality at
25 competitive levels.

1 Q Right. And you gave opinions that Google's exercise of
2 market power had reduced quality, and you were specific
3 about it, and I'm going to go over those later.

4 But, in general, it was about that Google reduced
5 quality because it was denying its customers access to
6 Google's rivals, either on DFP or on AdX?

7 A So for some of its conduct it worsened rivals' ability
8 to monetize, and that is a factor of quality.

9 Q Right. You looked at that factor of quality, but in
10 comparing the rival ad exchanges, you didn't look at how,
11 for example -- who was doing better at generating more
12 revenue for publishers; correct?

13 A I did look at differences in revenue generation.

14 Q Did you -- do you know -- did you look at whether AdX
15 was achieving more money for publishers than its
16 competitors?

17 A I think the spend shares speak to that, as well as my
18 auction simulations.

19 Q Oh, yeah. AdX was driving more revenue for its
20 customers than the competitors.

21 A Relative to competitors that were harmed by the
22 conduct.

23 Q And you didn't look at -- you didn't -- there's no
24 one -- you could talk to no one who was giving you any
25 technical opinions about the quality of the AdX system

1 versus any of the other ad exchanges; right?

2 A I don't recall those -- where in my report I may have
3 considered them. I don't recall that.

4 Q All right. When you are doing price comparisons of
5 take rates, you were doing simple comparisons, what did AdX
6 charge, for example, versus what did a competitor charge?

7 A Where I used that comparison, it is just the nominal
8 take rates being compared.

9 Q And you're not doing any adjustments to those take
10 rates based on quality considerations?

11 A Again, those are, where used, nominal take rate
12 comparisons.

13 Q Right. And the only price comparisons that you have
14 done in this case are what you describe as nominal price
15 comparisons?

16 A Yes.

17 Q Can we look at PTX 1459.

18 A I just want to -- I recall that's the case, yes.

19 THE COURT: Plaintiffs' 1459?

20 MR. ISAACSON: Yes. We'll put it on the screen
21 for you, sir. It's one of your charts.

22 THE COURT: I assume it's in. If it's not, it's
23 in.

24 THE WITNESS: Is it in my white binder?

25 BY MR. ISAACSON:

1 Q It's in your report, but it's probably easier on the
2 screen.

3 A Okay.

4 Q All right. You can look at it. It's Lee Rebuttal
5 Figure 97.

6 MS. WOOD: Do you have a page?

7 MR. ISAACSON: I don't, I'm sorry. It's also in
8 the binder.

9 MS. WOOD: No, it's not.

10 MR. ISAACSON: 1459 is.

11 MS. WOOD: It's in whose binder?

12 THE COURT: It's the rebuttal; correct?

13 MR. ISAACSON: 1459.

14 THE COURT: It's in the rebuttal?

15 MR. ISAACSON: It's in the rebuttal report, and
16 it's also in our binder that we handed to the witness. Is
17 it missing?

18 MS. WOOD: It's in the black binder.

19 MR. ISAACSON: Yes, in the black binder.

20 BY MR. ISAACSON:

21 Q So you recognize this as a chart that you prepared;
22 right?

23 THE COURT: No. The one on the board says
24 Dr. Israel.

25 MR. ISAACSON: He's talking about Dr. Israel, but

1 Professor Lee prepared this chart. This is from Professor
2 Lee's rebuttal report.

3 THE WITNESS: Which figure in the black binder,
4 please? PTX ...

5 MR. ISAACSON: 1459. It's under another tab.

6 THE COURT: I don't think it's in the book.

7 MS. WOOD: So it's also in the rebuttal report at
8 B35.

9 MR. ISAACSON: My colleague says some of the tabs
10 are back-to-back. A clumsy --

11 THE WITNESS: I found it.

12 MR. ISAACSON: Okay.

13 BY MR. ISAACSON:

14 Q All right. This is a chart you prepared; right?

15 A This is a chart from my report.

16 Q So let's explain what's happening here.

17 Dr. Israel did a calculation of click-through
18 rates for Google Ads. And that's the purple line; right?

19 A Yes.

20 Q Okay. And the -- and what you then did was take a look
21 at that and said, well, that includes mobile, and then you
22 also wanted to control for device composition, and so you
23 created the red line that excludes mobile and controls for
24 device composition; right?

25 A Yes. This was to make the point that controlling for

1 additional features that Dr. Israel did not would change the
2 conclusions that are being drawn.

3 Q And for the red line from 2012, the click-through rate
4 was a little under 0.2 percent; right? And by the end of
5 2022, the click-through rate on the red line had tripled;
6 right?

7 A That's what it shows.

8 Q Tripling in click-through rates for Google Ad
9 advertisers would be an increase in quality; wouldn't it?

10 A I think more would be need to be known if the sets of
11 impressions that are being bid on changes. Just a
12 compositional change to make a welfare statement, as you're
13 making, would require a further analysis.

14 Q All right. So let's look at PTX 1461.

15 MR. ISAACSON: We move to admit PTX 1461. This is
16 another one of Professor Lee's charts.

17 MS. WOOD: No objection.

18 THE COURT: All right. So 1459 and 1461 are in.

19 (Plaintiffs' Exhibit Numbers 1459 and 1461 admitted into
20 evidence.)

21 BY MR. ISAACSON:

22 Q This is a chart of costs-per-clicks.

23 Again, Dr. Israel had done a calculation of the
24 decline in cost-per-clicks, and that's the purple line;
25 right?

1 A That's what it appears to show.

2 Q Right.

3 And, once again, you excluded apps and did
4 weighted by device type, and that's the red line?

5 A Yes.

6 Q And from 2012 to the end of 2022, according to the red
7 line, the cost-per-click for an advertiser went down from
8 about 37 cents to just about 25 cents; right?

9 A That's what it shows.

10 Q All right. Do you think that's an increase in quality
11 for advertisers?

12 A They said before it's not enough to make that
13 conclusion. I talked in my reports why making inferences
14 like this from time trends alone is generally not possible.
15 Many other things are changing.

16 Q Do you think that --

17 THE COURT: Are they at least legitimate factors
18 to be considered in making that -- coming to a conclusion?

19 THE WITNESS: They are considerations, for sure.
20 But to conclude that definitively advertisers benefited, one
21 would want to know more about is ads bidding on different
22 kinds of impressions, for example. And that could be
23 driving it.

24 All else equal, lower prices could be benefiting,
25 but that may not be what's going on here.

1 BY MR. ISAACSON:

2 Q And to put them together, if you look at them together,
3 not separately, if click-through rates are going up and the
4 cost-per-clicks are going down, all other things being
5 equal, that's an important quality consideration; isn't it?

6 A Those are considerations.

7 Q All right. So the Google AdX prices -- can we look at
8 PTX 1280, the redacted version, which is Figure 110 of your
9 report.

10 THE COURT: Any objection to 1280?

11 MS. WOOD: No objection.

12 THE COURT: All right. It's in.

13 (Plaintiffs' Exhibit Number 1280 admitted into evidence.)

14 BY MR. ISAACSON:

15 Q All right. And here you chart -- this is AdX take
16 rates compared to other exchanges from 2018 through 2022;
17 correct?

18 A Yes.

19 Q All right. And in -- for the year 2018, there were --
20 four out of the six firms had equal or higher take rates
21 than AdX; correct?

22 A These are much smaller firms, but yes.

23 Q Okay. For the year 2019, five out of the ten firms had
24 equal or higher take rates than AdX; correct?

25 A That's what this says.

1 Q Okay. For the year 2020, three of the firms had equal
2 or higher take rates than AdX; correct?

3 A Three of these very small firms, yes.

4 Q Okay. For 2021, two firms had equal or higher take
5 rates than AdX; correct?

6 A Yes.

7 Q And the same is true in 2022, two firms, equal or
8 higher than AdX; correct?

9 A Yes.

10 Q And it is your testimony that these prices being
11 charged by AdX and compared to its competitors show durable
12 substantial market power; correct?

13 A Not this on its own. Just the totality of evidence
14 indicates sustainable and persistent market power.

15 Q All right. Do you think -- we've gone through -- I
16 mean, I'm obviously pointing out that a number of firms in
17 each year had higher prices than AdX.

18 Do you think this chart supports a conclusion of
19 persistent substantial market power?

20 A This chart is not inconsistent, and the totality of
21 evidence is consistent with substantial and sustained market
22 power on the part of AdX.

23 Q All right. I just wanted to make sure what you just
24 said.

25 This chart is not inconsistent with durable

1 substantial market power; correct?

2 A AdX has maintained a significant advantage -- scale
3 advantage over all of its rivals, and so this is not
4 inconsistent with that.

5 Q The -- AdX's -- and by the way, in terms of
6 quality-adjusted -- these issues of quality-adjusted prices,
7 scale can improve the quality of product -- of the products
8 we're talking about; right?

9 A Scale is important for the competitiveness of an ad
10 tech product and can help improve quality.

11 Q All right. We looked at some of your share charts for
12 AdX. I want to show you one other, which is PTX 1384. We
13 looked at your line charts, now this is a table.

14 MR. ISAACSON: So I would move to --

15 THE COURT: Any objection to this exhibit? It may
16 already be in. 1384.

17 MR. ISAACSON: I don't believe so, but I can be
18 wrong. I said PTX 1384.

19 MS. WOOD: PTX 1384.

20 THE COURT: Well, it's your exhibit, so you can't
21 object to it.

22 MS. WOOD: Yeah, I know. I agree.

23 THE COURT: It's in.

24 MS. WOOD: I just want to make sure I have it.

25 MR. ISAACSON: I believe you do.

1 MS. WOOD: I have it. Thank you.

2 THE COURT: All right. It's in.

3 (Plaintiffs' Exhibit Number 1384 admitted into evidence.)

4 BY MR. ISAACSON:

5 Q All right. So here's where you've written down in this
6 table different shares for different years for different
7 types of impressions, fees and spend worldwide in the United
8 States; right?

9 A Yes.

10 Q For all the share calculations from 2019 to 2022, both
11 worldwide and in the United States, there's no year where
12 you find AdX's market share is 70 percent or above; correct?

13 A Not on this table, no.

14 Q And in the United States, all of the shares in all of
15 those years by all those metrics are all 60 percent or
16 below?

17 A That's correct.

18 Q Okay. And if you look at share calculations, we saw
19 this in the line chart, but this table confirms it --
20 confirms it that on a spend basis, the market share is
21 34 percent; right? That's ad spend in 2022 for AdX.

22 A In 2022 for AdX.

23 Q 2022.

24 And in 2022, fees -- we haven't discussed that.
25 Fees are fees that you're taking in because of the take

1 rates; right?

2 A Yes.

3 Q Okay. And so AdX's share of fees in 2022 of ad
4 exchange fees from take rates was 37 percent; correct?

5 A Yes.

6 Q And that had declined from 2019 when it was 45 percent;
7 correct?

8 A Yes.

9 Q Now if we can look at PTX 1279.

10 THE COURT: Any objection? No. There can't be.

11 So it's in.

12 (Plaintiffs' Exhibit Number 1279 admitted into evidence.)

13 BY MR. ISAACSON:

14 Q All right. On your direct you looked at a similar
15 chart to this that was worldwide; I'm showing you the --
16 which was PTX 1242. I'm showing you the United States.

17 And what this is is, across the top, you've got
18 the take rate of AdX. That's the blue line; right?

19 A The average take rate for U.S. impressions, indirect
20 open web. Yes.

21 Q And the green line is average third-party exchange take
22 rate for impressions in the United States?

23 A The weighted average, correct. Yes.

24 Q And then the shaded area, you combined those price
25 lines with market share lines based on -- I believe it's on

1 impressions. Yes. Impressions. AdX share impressions.

2 You see that shaded area?

3 A I do, yes.

4 Q Okay. And so what this shows is, for example, if you
5 look at the middle of 2020 in the United States on an
6 impression basis, the AdX share is 60 percent, and at the
7 same time, since 2019 -- so I think it's in, like -- for
8 example, July 2019, the weighted average exchange take rate
9 of the third parties hits about 20 percent. It hits the
10 blue line; right?

11 A The beginning of 2018.

12 Q Yes. Yeah. Yeah.

13 So since then, the prices come down from the
14 competitors; right?

15 A Yes, but not for AdX.

16 Q Right. And what does come down is the market share of
17 AdX. AdX declines, again on this impressions basis, from
18 60 percent to between 40 and 50 percent; right?

19 A Yes.

20 Q All right. I want to look at some exhibits that you
21 talked about with your counsel. PTX 1261. It's in your
22 white binder from your counsel. I would also put it on your
23 screen.

24 A What number, please?

25 Q 1261.

1 THE COURT: And, again, we're using the A version.
2 Yes, the redacted version.

3 MR. ISAACSON: Yes. Yes. 1261A, right.

4 BY MR. ISAACSON:

5 Q AdX in this has 40 percent of the U.S. impressions in
6 2022; correct?

7 A I recall the number was 47, did you say?

8 Q I'm looking at the blue bar on the left and saying it
9 looks like 47. Maybe it's 48.

10 A I believe it was 47.

11 Q Okay. And the other exchanges have 53 percent; right?

12 A That sounds right.

13 Q And the exchanges that you have listed there, in order
14 to get to the 53 percent, there's a lot more exchanges than
15 that; right?

16 A There are many small exchanges, but the next closest
17 rival is five times smaller here.

18 Q And to return to your gas station analogy, if you have
19 a gas station in town that's selling 50 percent of the
20 gasoline, and the other 50 percent of the gasoline is being
21 bought from 50 other gas stations, isn't that a lot of
22 competition?

23 A Not on its own. That's why economists recognize market
24 shares alone aren't determinative of market power.

25 Q If we can look at PTX 1294.

1 Okay. This is a line chart of what we were just
2 looking at. This is -- this is the same thing; right?
3 You've got some of the exchanges at the bottom, but all of
4 the exchanges would add up to cover all of the territory
5 above the blue line; right?

6 A Yes.

7 Q If we could look at PTX 1393. All right.

8 You mentioned the term GAM-level data. GAM-level
9 data -- oh, this is log-level data. This is log-level data,
10 sorry. Okay.

11 This data, according to the note, is only Open
12 Bidding; right?

13 A It's auctions run in DFP's GAM.

14 Q Right. Through Open Bidding?

15 A AdX Open Bidding. There's also something called header
16 bidding yield group, but it's the Unified First Price
17 Auction.

18 Q Right. The GAM data through Open Bidding is not
19 capturing all the header bidding; is it?

20 A I mentioned there's this header bidding yield group
21 through which header bidders can participate in the Unified
22 First Price Auction.

23 Q That's some header bidding, not all of it; right?

24 A There may be some header bidding outside of the Unified
25 First Price Auction.

1 Q You don't actually know how much header bidding is not
2 being captured by this data; do you?

3 A So there are some fields. In a robustness check, what
4 I do is look through this custom targeting criteria which
5 identifies potential header bidders as coming in as other
6 line items. So I do what I can to account for them in a
7 robustness.

8 Q I'm not sure if I understand if I got the answer to
9 that question.

10 With apologies, you don't know, from this data set
11 that you used, how much header bidding you're leaving out;
12 do you?

13 A I do not know definitively.

14 Q And the green bar there is all inventory that would
15 have gone unsold without AdX; right?

16 A Say that again.

17 Q The green bar on the left -- so AdX has a blue bar and
18 a green bar. The green bar is all inventory that would have
19 gone unsold without AdX because AdX was the only bidder
20 above the floor price; right?

21 A It's the only one above the floor.

22 Q Right. So without AdX bidding on those -- on those
23 impressions, in the green bar, all of that would be unsold
24 space on the Internet; right?

25 A In the auction simulations, that's the assumption.

1 It's -- some publishers may have other ways of monetizing
2 that.

3 Q But quite literally what this data is, this is data
4 that says that the only bidder was AdX. So if you take out
5 this bid -- the only bidder above the floor price. So if
6 you take away that bid, there's no bidder above the floor
7 price; right?

8 A That's how it's defined.

9 Q If we can look at PTX 1395.

10 THE COURT: I assume it's in. If it's not, it's
11 in now.

12 (Plaintiffs' Exhibit Number 1395 admitted into evidence.)

13 MR. ISAACSON: I move to admit -- well, no. This
14 has been admitted, so ...

15 BY MR. ISAACSON:

16 Q This is also the Open Bidding data that you described;
17 right? This is the same Open Bidding data we were just
18 talking about?

19 A The GAM log-level data.

20 Q And -- excuse me. I'm looking for a footnote about
21 this data.

22 This GAM-level data, can I ask you to take a look
23 at your rebuttal report, page 179.

24 A What page, please?

25 Q Page 179.

1 MR. ISAACSON: Okay. So Footnote 779, if we could
2 make that bigger because this is technical.

3 THE WITNESS: I just want to note that this
4 footnote is for a different exercise.

5 BY MR. ISAACSON:

6 Q I was just going to ask you, is this the GAM-level log
7 data that's been used for these charts?

8 A It is about the GAM log-level data.

9 Q Right. Okay. This is the GAM log-level data that was
10 used in 1393 and 1395; right?

11 A Yes. It's about the GAM log-level data.

12 Q Okay. That data, according to Footnote 79:
13 "Information on the winning advertiser is not reliable for
14 all auctions in the GAM log-level data." All right.

15 Your charts have been showing who's winning the
16 auctions. You note here that the information on the winning
17 advertiser is not reliable for all the auctions; right?

18 A Well, the advertiser's different than the bidding tool
19 in exchange. This is an exercise where we're looking at
20 unique publisher-to-advertiser pairs.

21 Q Okay.

22 A It is not talking about the exchanges or demand sources
23 bidding into the auction.

24 Q Let me ask you what it says.

25 It goes on to say that reservation bidders -- it

1 says: "Google documentation with the data notes that
2 reservation bidders represent remnant demand sources which
3 won the auction, for which Google does not know the identity
4 of the advertiser." And the footnote concludes: "As a
5 result, I do not include these auctions in my analysis."

6 So do -- the charts that we've been looking at
7 that have the GAM-level log data, do they exclude the
8 remnant demand sources?

9 A So, again, those are the auction removal simulations
10 where the identity of the advertiser is not integral. This
11 is talking about --

12 THE COURT: That's not answering the question.

13 Ask your question again.

14 BY MR. ISAACSON:

15 Q All right. So the data in your charts that referred to
16 GAM-level log data -- I'm sorry, GAM log-level data, okay,
17 does that data remove the remnant demand sources which won
18 the auction?

19 MS. WOOD: I'm going to object. I think we have
20 to clarify -- we can't just refer to charts generally.

21 THE COURT: No. I'm going to let this question
22 go. It calls for a yes-or-no answer. And then on redirect,
23 if you need to clarify it, you can. It's a yes-or-no
24 answer.

25 MS. WOOD: But the footnote relates to a different

1 chart.

2 THE COURT: You can correct that on redirect. The
3 answer is yes or no.

4 THE WITNESS: So Figure 28 is what we were talking
5 about. It indicates that --

6 BY MR. ISAACSON:

7 Q Just -- so the GAM log-level data in Figure 28, which
8 is PTX 1395, does that not include the remnant demand
9 sources which won the auction?

10 A So one of the remnant -- it does include some as it
11 shows in the Figure 28 caption.

12 So, again, it does include some of these remnants,
13 demand sources.

14 Q So it includes some.

15 Sir, the footnote says --

16 THE COURT: All right. That's his answer to the
17 question.

18 MR. ISAACSON: I don't know if he's --

19 THE COURT: He said some.

20 MR. ISAACSON: But is it --

21 THE COURT: That's the answer, Mr. Isaacson. Move
22 on, please.

23 MR. ISAACSON: Can I find out what some is, Your
24 Honor? I don't know if some is --

25 THE COURT: It means a little bit. Some. It

1 means it's more than zero. Okay. That's it.

2 MR. ISAACSON: All right.

3 PTX 1444.

4 THE COURT: I think it's in. If not, it is.

5 (Plaintiffs' Exhibit Number 1444 admitted into evidence.)

6 BY MR. ISAACSON:

7 Q PTX 1444 which is about bidding tools.

8 A I'm sorry. Is it in the black binder or the white
9 binder?

10 Q The white binder. It's one of the exhibits that you
11 talked about with plaintiffs' counsel, and it will go on
12 your screen, too.

13 A Yes.

14 Q Okay. The source for this is, again, the GAM log-level
15 data; right?

16 A Correct.

17 Q And it's also the Open Bidding data that you talked
18 about; correct?

19 A It's the log-level data from Google.

20 Q Right. But we also talked about how the Open
21 Bidding -- this is also from the data that was run through
22 Open Bidding; right?

23 A It includes open bidders into the auction.

24 Q If we look at PTX 1262. Now you're going to the black
25 binder.

1 THE COURT: Is 1262 in? If not, are you moving it
2 in?

3 MR. ISAACSON: Yes. PTX 1262.

4 THE COURT: It's in. We've seen it. Maybe not.
5 1262 is in.

6 MR. ISAACSON: And there will be a 1262A for this
7 as well, Your Honor.

8 THE COURT: All right.

9 (Plaintiffs' Exhibit Numbers 1262 and 1262A admitted into
10 evidence.)

11 BY MR. ISAACSON:

12 Q This is a chart you prepared; right?

13 A Yes.

14 Q And here, you're charting revenues from the sale of
15 indirect open-web display impressions; correct?

16 A Net revenues, but yes.

17 Q And the revenues that are earned by AdX, as well as
18 other ad exchanges; correct?

19 A Yeah. Again, net revenues.

20 Q Yes. I'm sorry. Net revenues.

21 And the -- so the -- that's a good point.

22 So we're looking at net revenues. The actual revs
23 would be higher numbers?

24 A Yes. Spending would be higher.

25 Q And in 2018, AdX's U.S. monthly net revenue was about

1 30 million, and that increased to about 45 million in -- at
2 the end of 2022; right?

3 A Approximately, yep.

4 Q And for AdX and the other ad exchanges, the total net
5 revenues in 2018 were a little bit above 40 million, let's
6 call that 42 million, and those had grown to between 100 and
7 120 million by 2022; right?

8 A There may be some additional exchanges that produced
9 data later in the sample, so this is -- more exchanges might
10 be providing data later.

11 Q Right. That was going to be my next question.

12 For the exchanges that you had data on, I'm
13 getting the numbers correct; right?

14 A So each month the exchange's data on -- there's more
15 net spend -- net revenues for the exchanges I had data on.

16 Q And you had Firms A through K there. There are more ad
17 exchanges out there than you have charted earning net
18 revenues; right?

19 A I've imputed those, yes, estimates for.

20 Q Okay. And then if we could look at PTX 1239.

21 THE COURT: All right. That's in?

22 MR. ISAACSON: No. And this will need a 1239A as
23 well.

24 THE COURT: All right.

25 (Plaintiffs' Exhibit Numbers 1239 and 1239A admitted into

1 evidence.)

2 BY MR. ISAACSON:

3 Q And this is the same chart worldwide; right?

4 A Yes.

5 Q So I won't go through those numbers.

6 The -- now, for the publisher at -- for publisher
7 ad servers, can we look at PTX 1277, which, again, I will
8 move to admit with 1277A.

9 MS. WOOD: No objection.

10 THE COURT: All right. It's in.

11 (Plaintiffs' Exhibit Numbers 1277 and 1277A admitted into
12 evidence.)

13 BY MR. ISAACSON:

14 Q Okay. So I'm moving from ad exchanges to publish ad
15 server, sir. Okay.

16 This is your chart of impressions served by
17 publisher ad servers in the United States from 2018 to 2022;
18 do you see that?

19 A Yes. For U.S. publisher customers.

20 Q Okay. And the -- from 2018, those impressions rose.
21 So that's going to be between -- those impressions are in
22 the billions. So from 4 to 500 billion on a monthly basis
23 to close to 600 billion in 2022; right?

24 A Among the firms providing data each of the months, the
25 sum is increasing.

1 Q And then on a worldwide basis --

2 MR. ISAACSON: PTX 1236, I move to admit that, and
3 1236A.

4 THE COURT: All right. They're in.

5 MS. WOOD: No objection.

6 (Plaintiffs' Exhibit Numbers 1236 and 1236A admitted into
7 evidence.)

8 BY MR. ISAACSON:

9 Q Now we're talking about the trillions. 2018, about
10 1.3 trillion total for all the ad servers rising to over
11 1.6 trillion by the end of 2022; right?

12 A So about 1.3 trillion to, you said 1.6 trillion within
13 the period?

14 Q Yeah.

15 A Among the, again, different publisher ad servers
16 contributing data in the different months, but yes.

17 Q And in terms of whether DFP has been anticompetitive,
18 you do agree that a publisher using DFP can make every
19 impression on its site available for bid through Amazon
20 header bidding; right?

21 A There's a lot in that question. Could you repeat that?

22 Q Okay. You do agree that a publisher using DFP can make
23 every impression on its site available for bid through
24 Amazon header bidding; correct?

25 A I believe a publisher has that option.

1 Q Right. And a publisher also has the option on DFP to
2 make every one of its impressions available for bid by
3 Prebid ad tech; right?

4 A If I Prebid the header bidding wrapper, I believe
5 that's true.

6 Q Yes.

7 A They can do that.

8 Q All right. And using DFP, a publisher can make every
9 impression on its site available to any ad exchange;
10 correct?

11 A I believe at present. Conditional, I think -- I don't
12 recall if there were restrictions on which exchanges DFP has
13 the ability to work with. But broadly, most of the
14 exchanges here would fall in that category.

15 Q Right. I take your point. Hopefully there's somebody
16 whose trouble so we're not dealing with it.

17 Now, for publisher ad servers, you talked about
18 direct evidence of market power. And you said the direct
19 evidence is that DFP degrades quality. That was your direct
20 evidence of substantial market power by the publisher -- by
21 DFP; right?

22 A That is an example of direct evidence of market power.

23 Q And the two types of direct evidence you listed was the
24 Uniform Pricing Rules and that Google restricted Google Ads
25 demand to AdX and did not make it available to rivals;

1 right?

2 A Can you repeat your question, please?

3 Q Okay. Well, you pointed out two pieces of direct
4 evidence, one was the Uniform Pricing Rules; correct?

5 A Unified Pricing Rules. That's one example.

6 Q And the second was that Google restricts Google Ads
7 demand to AdX and does not make it available to rivals?

8 A I didn't list that as direct evidence of DFP's market
9 power explicitly.

10 Q Okay. What was your second piece of direct evidence
11 then?

12 A Well, the restriction is that DFP historically placed
13 on how publishers could call other exchanges in the
14 waterfall or then later subject them to last look with
15 header bidding. The example of DFP constraining how
16 customers could use its products.

17 Q All right. So your direct evidence is the conduct?

18 A Some of Google's -- yes. Those two acts represent
19 exercises of market power.

20 Q Okay. So the direct evidence of market power is the
21 conduct that you've -- some of the conduct you've described
22 in this case?

23 A Yes.

24 Q And for publisher ad servers, you have not -- you did
25 not proffer in your direct testimony any direct evidence

1 other than some of the conduct?

2 A I don't recall if I mentioned other pieces sitting here
3 today.

4 Q Okay.

5 A I just got some in my reports.

6 Q And with regards to Uniform Pricing Rules, you
7 considered that direct evidence of market power because the
8 pricing rules are denying publisher choices; is that right?

9 A It took away a feature that its customers valued and
10 used without losing significant volume or demand.

11 Q When you say "customers valued," you don't know how
12 much customers valued that choice; do you?

13 A There was evidence that large publishers used this
14 ability to set variable pricing floors.

15 Q That's not quite my question.

16 You don't know how much they valued it?

17 A In terms of describing it in a particular dollar
18 number, I did not perform that qualification.

19 Q On a qualitative basis, you don't know how important
20 that choice was to publishers, you just know that some used
21 it?

22 A I've seen it in sworn testimony in documents that
23 indicate that publishers valued this functionality for a
24 variety of reasons.

25 Q All right. I'll come to that.

1 Is it your opinion that any time technology is
2 redesigned to take away an option to a customer, that's
3 direct evidence of market power?

4 A Not necessarily.

5 Q Okay. And sometimes redesigns of technology can happen
6 that take away customer choice, and the product is made
7 better by the technical redesign. That happens; doesn't it?

8 A It could. It's a very general hypothetical.

9 Q All right. I'm just going to limit myself -- I'm not
10 going to go through the whole Uniform Pricing Rules again.
11 We've seen the key documents.

12 But just in terms of what you have said about
13 customers about this, if we can look at your report,
14 paragraph 711. Your opening report.

15 All right. Here in this paragraph, you talk about
16 publisher reaction to the announcement of UPR, which the
17 Court has heard about. But just in terms of the sources you
18 were citing, so paragraph 1025, which is PTX, for the
19 record, 762, that's dated May 9th, 2019; right?

20 A The paragraph 1025?

21 Q Footnote 1025. So the first footnote to paragraph 711,
22 which is discussing publisher reaction to UPR, is
23 Footnote 1025; do you see that?

24 A Yes.

25 Q Okay. And that's a document which is dated May 9th,

1 2019?

2 A Yes.

3 Q Okay. And the launch of Unified Pricing Rules,
4 together with the Unified First Price Auction, that happens
5 in September; right?

6 A There was fully launched in September of 2019.

7 Q And then you also cite in that paragraph Footnote 1026.
8 That's also a document dated May 11th, 2019. And, for the
9 record, that's PTX 763.

10 A Yes.

11 Q And then you cite one other document which is dated
12 September 3rd, 2019, but that actually describes -- has an
13 outline of what happened before that, and it's still before
14 the launch; right? And this is, for the record, DTX 782.

15 A Yes. It's a May 2019 presentation.

16 Q All right. And in terms of any adverse publisher
17 reaction to the Uniform Pricing Rules, after the summer of
18 2019, the only thing you were aware of is some testimony
19 from Vox and also that there were some -- that News Corp was
20 unhappy, The Guardian and an unidentified Dutch publisher;
21 right? That's all you know about unhappiness with UPR after
22 the summer of 2019?

23 A I know I discussed other pieces of evidence later in my
24 report, but I don't recall all of the other ones sitting
25 here today.

1 Q All right. They -- if we just look at your deposition
2 at page 314.

3 MS. WOOD: Page what?

4 MR. ISAACSON: 314, line 13. And I incorrectly
5 said that DTX 782 was admitted into evidence. Oh, it should
6 be PTX 1035 instead. I'm sorry.

7 THE COURT: I'm sorry?

8 MR. ISAACSON: When I referred to DTX 782, I
9 should have referred to PTX 1035. I was tying that to the
10 individual footnotes.

11 THE COURT: 1035 is already in or not?

12 MR. ISAACSON: Yes. And that references
13 Footnote 1027.

14 THE COURT: All right. You're in the deposition?

15 MR. ISAACSON: Actually, let's just move to
16 page 316. I'll move this forward. Page 316.

17 BY MR. ISAACSON:

18 Q You were asked the question: "Were you aware of any
19 publishers who -- after June 2019, who were unhappy about
20 Unified Pricing Rules other than News Corp, The Guardian,
21 the Dutch publisher and Vox?" You said: "There may be
22 others in my report, but sitting here today, I'm not
23 recalling."

24 And you couldn't recall at your deposition.
25 Today, you're still not recalling any others besides those

1 four; right?

2 A Sitting here today, I don't recall others.

3 Q And you're not aware of any surveys of publishers in
4 this case about how they felt about the -- about UPR after
5 the launch or before the launch?

6 A I recall a survey cited in Google's expert reports.

7 Q The -- and do you think that survey showed any
8 unhappiness?

9 A I discussed issues with that survey in my rebuttal
10 report.

11 Q Okay. Let's talk about advertiser ad networks.

12 Here, you say: "The direct evidence of market
13 power in the advertiser ad networks is that Google is
14 denying other advertiser ad networks' access to Google Ads
15 demand"; right?

16 A Can you repeat that?

17 Q Sure. Here you say: "The direct evidence of market
18 power in the publisher ad server" -- "in the advertiser ad
19 network" -- the direct evidence of market power there is
20 Google is denying ad exchanges' access to Google Ads demand.

21 A That is an example, in addition to the pricing
22 experiments I discussed.

23 Q So, again, you're saying here the direct evidence of
24 market power is a piece of the conduct?

25 A The conduct involves failing to maintain quality at

1 competitive levels. It is evidence of market power.

2 Q Right. And, in fact, the direct evidence of market
3 power here is Google is not sharing its own customers of
4 Google Ads with rival ad exchanges; right?

5 A I wouldn't characterize it that way.

6 Q Well, it's accurate; isn't it?

7 MS. WOOD: Objection. Asked and answered.

8 THE COURT: Well, I'm going to let you -- how
9 would you characterize it?

10 THE WITNESS: It's -- the conditioning of Google
11 Ads, the access to all of its bids on the use of AdX. So
12 Google Ads is not bidding on the same set of impressions
13 across the same -- as widely across exchanges.

14 BY MR. ISAACSON:

15 Q Let me short circuit this, if I can.

16 You were here for Dr. Abrantes-Metz's testimony?

17 A Yes.

18 Q And you heard her testimony when I walked through how
19 Google was denying customer choice, and we went through the
20 different customers and she explained how choice was denied?

21 MS. WOOD: Objection, Your Honor. I think we need
22 to establish some rules, because during earlier testimony
23 with Professor Ravi, Google objected to asking Professor
24 Ravi questions about material Professor Ravi had heard
25 during the course of the trial. So we need to be clear on

1 what the rules are going forward.

2 THE COURT: I don't think that's appropriate.

3 Just ask the question without preamble.

4 MR. ISAACSON: Right. I thought we would save a
5 lot of time.

6 THE COURT: No.

7 MR. ISAACSON: Just in terms of this objection,
8 there's a difference between direct and cross-examination in
9 terms of this.

10 THE COURT: Let's move this along.

11 MR. ISAACSON: I will.

12 BY MR. ISAACSON:

13 Q When you say "conditioning," that still means that
14 Google Ads' advertisers are not being shared with rival ad
15 exchanges of Google?

16 A Advertisers and open-web publishers can transact
17 through Google Ads and in other rival ad exchange for all
18 impression types.

19 THE COURT: That's not answering the question.

20 BY MR. ISAACSON:

21 Q So when you say -- you talk about conditioning, this
22 condition that you're talking about is that Google Ads'
23 advertisers, the customers at Google Ads, are not being
24 shared with the competitor ad exchanges to AdX; right?

25 A Those advertisers can't use Google Ads to bid on other

1 rival ad exchanges as they do through AdX. There are
2 restrictions on how they can bid.

3 Q Is that a yes?

4 A You're using the word "share." I guess it's just not
5 allowing them that ability to do that.

6 THE COURT: It's not allowing rival exchanges to
7 get access to the Google advertisers?

8 THE WITNESS: Through Google Ads, yes, Your Honor.
9 Rivals to AdX.

10 THE COURT: All right.

11 BY MR. ISAACSON:

12 Q Now, the term "advertiser ad network," you had not
13 heard that term before this case; right?

14 A I did not recall hearing those three words in that
15 order prior to this case.

16 Q Okay. Can we look at Figure 61 of your report, which
17 is page 303.

18 A My rebuttal or my initial?

19 Q I guess it's the rebuttal report. Yeah. Sorry. If we
20 could make this Lee Demonstrative 6.

21 THE COURT: This is demo ...

22 MR. ISAACSON: Six.

23 THE COURT: Six.

24 BY MR. ISAACSON:

25 Q And here, you have this -- ad tech components are

1 mix-and-match like LEGOs. And under Google Ad Manager, you
2 list 250 networks. Okay.

3 Are those advertiser networks? Or are those ad
4 networks? Sorry.

5 MS. WOOD: Objection to the reference to "you
6 list." I believe this is reflecting a document Google
7 prepared, not the witness.

8 MR. ISAACSON: Perfectly fair.

9 THE COURT: That's a fair objection.

10 Sustained.

11 MR. ISAACSON: Perfectly fair.

12 BY MR. ISAACSON:

13 Q In terms of this document that you put into this
14 Figure 61, does the 250 networks refer to ad networks?

15 A This is a Google document that was presented to the
16 DOJ. I'm putting in my report to note that they're
17 emphasizing the importance of interoperability. I'm not --
18 I can't say what Google meant when they put networks here.

19 Q So just based on your understanding of this industry,
20 do you know what 250 networks would be?

21 A This may be across different types of digital
22 advertising, but it could include advertiser ad networks.

23 Q Well, you used this term advertiser ad networks.

24 So various witnesses in this case refer to ad
25 networks. And do you understand there to be a difference

1 between ad networks and advertiser ad networks?

2 A So they're used in many different ways. Google has
3 defined Google Ads as the advertiser-facing component of its
4 ad network.

5 Q So there are many ad networks as opposed to advertiser
6 ad networks; right?

7 A There can be. I don't know all -- the entire set of ad
8 networks across all digital advertising formats.

9 Q And in your advertiser ad network market, there are
10 three firms, one of which is Google Ads; right?

11 A Yes.

12 Q And one of them stops transacting open-web display
13 advertising during the period that you've looked at; right?

14 A Yes.

15 Q Now if we can look at PTX 1281.

16 MR. ISAACSON: And I would move to admit, as well
17 as a public version of PTX 1281A.

18 THE COURT: All right. They're in.

19 (Plaintiffs' Exhibit Numbers 1281 and 1281A admitted into
20 evidence.)

21 THE WITNESS: The white binder or black binder,
22 please?

23 BY MR. ISAACSON:

24 Q This would be the black binder. We'll put it on the
25 screen.

1 This is a chart you prepared in your reports;
2 right?

3 A Yes.

4 Q Okay. And so there's Google Ads, and you can see the
5 average margin or take rates across different inventory
6 sources. All right. And then there's Firm S and Firm T.
7 Firm T is gone by the end of 2020, and Firm S continues.

8 A Yes.

9 Q So those are the two other competitors in this market.

10 For the competitor take rates are two to three
11 times higher than the take rate for Google Ads in many
12 categories; aren't they?

13 A It depends on the transaction type. But, for example,
14 Firm S is higher than many of Google Ads' take rates.

15 Q All right. And the largest competitor to Google has
16 take rates higher than Google by at least seven to ten
17 points, and sometimes they are over triple the rate of
18 Google Ads; right?

19 A Which numbers are you looking at?

20 Q So that would be Firm S.

21 A Uh-huh.

22 Q Okay. Firm S always has a take rate of at least seven
23 to ten points higher in the different categories than Google
24 Ads, and sometimes it's two to three times higher.

25 A Generally it's higher. It's a six times smaller

1 network than Google Ads.

2 Q All right. And for Google Ads buying through
3 third-party exchanges, compared to Firm S, Firm S is
4 charging a take rate of 43 percent compared to Google Ads'
5 31 percent; right?

6 A I don't see the 43.

7 Q Let me make sure I got this right.

8 So Google Ads --

9 THE COURT: 42.

10 MR. ISAACSON: Oh, 42. Sorry. Yes. 42.

11 THE WITNESS: In 2020 --

12 MR. ISAACSON: In 2020.

13 THE WITNESS: -- that's what it says.

14 BY MR. ISAACSON:

15 Q The -- and you have said -- so Google Ads in general,
16 in your defined market, is the discount provider; right? If
17 you want the lowest rates, go to Google Ads in this market.

18 A On average, it bids on a wider range of impressions
19 than Firm S, which is focusing on remarketing.

20 Q All right. And with respect to Google Ads, Google Ads
21 can be used by advertisers to buy ads not only on
22 third-party websites and apps, but on Google's
23 owned-and-operated properties; right?

24 A Yes.

25 Q And Google Ads competes with Meta and Facebook ads with

1 respect to the sale of ads on owned-and-operated property;
2 right?

3 A To some degree.

4 Q If we can look -- now go to your white binder.
5 PTX 1808.

6 THE COURT: Any objection in case it's not in?

7 MR. ISAACSON: This is already admitted and
8 discussed earlier.

9 THE COURT: All right.

10 BY MR. ISAACSON:

11 Q And PTX 1808 is one of the experiments.

12 This experiment was in March 2014; correct?

13 A Yes.

14 Q All right. The amount of time that this experiment is
15 run is a short amount of time; correct?

16 A I don't recall if it's listed in this document the
17 length of the experiment.

18 Q But typically these experiments run on a day or a week,
19 you know, that sort of time period?

20 A I don't recall this -- the length of this experiment.

21 Q Okay. Are you aware of anybody at Google who would say
22 that the short-term results being reported here would
23 continue in the medium or long term, that Google would have
24 that expectation?

25 A I'm sorry. I didn't follow your question.

1 Q Are you aware of any -- anything showing that Google
2 would look at these short-term experiments such as this and
3 expect that the results would continue over the medium and
4 long term?

5 A I don't recall anyone saying that. I do understand
6 that experiments tend to report these short-term effects.

7 Q All right. And if you look at 858, PTX 858, which is
8 another experiment you also discussed, this is 2018. Did
9 Google Ads increase its take rate from 14 percent after this
10 experiment?

11 A Excuse me?

12 Q Did Google -- after this experiment in 2018, did Google
13 Ads increase its take rate from -- to above 14 percent?

14 A I recall seeing documents that that change happened
15 around the 2014 experiment we discussed earlier.

16 Q I'm now talking about 2018, sir.

17 Are you aware of any evidence that Google
18 increased its take rate after this May 2018 experiment?

19 A Not as average margin I don't -- I don't recall
20 evidence of that.

21 Q All right. The -- and I think you said on your direct
22 that one of the advantages of Google Ads versus DV360 is
23 Google Ads has a simplified user interface; is that right?

24 A Yes.

25 Q And have you seen that interface?

1 A I recall logging in.

2 Q Okay. Now, when Google Ads bids on behalf of
3 advertisers at AdX auctions, the advertisers compete against
4 bids from DV360 and other bidding tools; correct?

5 A I'm sorry. Can you repeat, please.

6 Q We're still talking about Google Ads.

7 So when Google Ads bids on behalf of advertisers
8 in AdX auctions, those advertisers, those Google Ads'
9 advertisers, compete against bids from advertisers on DV360
10 and other bidding tools; right?

11 A Yes.

12 Q Okay. And those bidding tools include demand-side
13 platforms such as The Trade Desk, Xandr, which is now owned
14 by Microsoft, and the Amazon DSP; right?

15 A Yes.

16 Q Google Ads is -- the advertisers -- Google Ads is
17 literally competing against demand-side platforms to win
18 impressions being auctioned on AdX on behalf of its
19 advertisers; right?

20 A Advertisers using Google Ads are bidding into the same
21 auction. So, in that sense, they are competing with bidders
22 from other bidding tools.

23 Q All right. If we could look at PTX 1435. Is this in
24 my binder? Oh, this is my binder, sorry. Yeah. In our
25 binder. Sorry.

1 MR. ISAACSON: Can we put it on the screen?

2 This has not been admitted. It needs to be.

3 THE COURT: Any objection? There shouldn't be;
4 it's your exhibit.

5 MS. WOOD: No objection.

6 MS. RHEE: There needs to be a 1435A as well.

7 THE COURT: All right.

8 (Plaintiffs' Exhibit Numbers 1435 and 1435A admitted into
9 evidence.)

10 BY MR. ISAACSON:

11 Q This is a chart you prepared reflecting Google Ads
12 share of all spend on advertiser bidding tools; correct?
13 Including demand side platforms.

14 A For U.S. impressions.

15 Q For U.S. impressions, yes.

16 A Yes.

17 Q And the dark blue and the light blue are Google Ads on
18 AdX and non-AdX; correct?

19 A Yes.

20 Q Okay. Well, actually, there's degrees of light blue,
21 so maybe I'll call it medium blue.

22 The Google Ads on AdX and the Google Ads on
23 non-AdX, which are the two bottom bars, are about 20 percent
24 of the share of open-web display spending of all advertising
25 buying tools; right?

1 A Yes. I want to be clear, I'm not opining that this is
2 appropriate relevant market.

3 Q I understand that.

4 All right. In reaching your opinions in this
5 case, you -- about Google's conduct, you are not specifying
6 what Google's alternative or but-for conduct would have
7 been; right?

8 A Can you explain what you mean by "would have been"?

9 Q So what they would have done absent the anticompetitive
10 conduct you have alleged.

11 A I'm not expressing an opinion on what Google would have
12 done.

13 Q In a but-for --

14 A In a specific but-for world.

15 Q Right. Or in any but-for world.

16 You're not excessing what Google's conduct would
17 have been in any but-for world where the but-for world is a
18 world that doesn't have the conduct that you have described?

19 A I'm not putting forward a specific but-for world.

20 Q I couldn't --

21 A I'm not putting a specific but-for world. My
22 conclusions are relative to, you know, less exclusionary
23 forms of conduct.

24 Q All right. Well, the less exclusionary forms of
25 conduct, what are those?

1 A I think we discussed before for some of the particular
2 conducts.

3 Q All right. Well, do you want to -- we can put up your
4 list of conduct if that would help you. But maybe -- I
5 would like you to define for the Court what you are saying
6 would be the less exclusionary conduct. Would you like to
7 see your --

8 THE COURT: For Google Ads.

9 THE WITNESS: For Google Ads.

10 MR. ISAACSON: For Google Ads.

11 THE COURT: Yes.

12 THE WITNESS: It would include bidding on a wider
13 set of impressions or bidding in a non-discriminatory
14 fashion.

15 BY MR. ISAACSON:

16 Q Okay. But that's not -- if you got rid of that
17 conduct, you're not describing anything about what the world
18 would look like?

19 A Other than relative to that world. The current world
20 is one in which competition has been harmed.

21 Q Okay. And when I said that you have -- when you said
22 you haven't attempted to find a but-for world, that applies
23 to all the conduct, not just the Google Ads' conduct;
24 correct?

25 A My earlier comment applied to all of the conduct.

1 Q All right. Could we look at Plaintiff Demonstrative P.

2 This is, again, talking about Google Ads demand?

3 A Yes, it is. Or it's referring to --

4 Q I'm just talking about the topic here. Just -- I'm on
5 the topic of Google Ads demand, and now I'm going to ask you
6 a question.

7 A Understood.

8 Q The data in this chart is one -- it's on the screen for
9 you, too. This was a demonstrative from your direct.

10 This is -- it's not in my binder because you used
11 it with plaintiff counsel.

12 This is one -- this chart is based on one day of
13 data; right?

14 A This one, yes. It's a one day of data.

15 Q So when it says exclusively through Google Ads, such as
16 the 58 percent, okay, that's exclusive in one day, meaning
17 that on that day, the advertiser only bought through Google
18 Ads?

19 A That's not what this says. It's the advertiser
20 publisher pair only transacting through Google Ads that day.

21 Q Right. And then if the advertiser publisher pair
22 transacts on the next day off of Google Ads, they would
23 still be marked for this day as exclusively through Google
24 Ads?

25 A What happens the next day does not affect this chart.

1 Q Right. And now in the second pie chart at the bottom,
2 37 percent Google Ads multi-bidders.

3 So on that day, does that show that 37 percent of
4 publisher revenues involved multi-homing on multiple tools?

5 A Yeah. It represents that advertiser publisher pair
6 using different tools to transact in that day.

7 Q Right. And this is, again, the GAM log-level data that
8 we discussed before; right?

9 A Yes.

10 Q Okay. If we can look at PTX 324, which was in your
11 white binder, something that you discussed in your direct
12 testimony.

13 This was -- all right. This was an experiment
14 that you talked about in your direct testimony. This was
15 run on all of Google Ads, not limited to open web; right?

16 A It doesn't specify a restriction.

17 Q It was run including the large and small advertisers on
18 Google Ads; right?

19 A It doesn't specify a restriction, but that's my
20 understanding.

21 Q Do you know what is the percentage of Google Ads spend
22 by large advertisers?

23 A I recall reporting statistics in my initial report like
24 on my direct -- it didn't perfectly overlap at large, but
25 Google Ads' advertisers who don't use DV360 have most of the

1 spending on Google Ads compared to the advertisers who use
2 both the ads and DV360. And I think I have something else
3 that talks about size of advertising spend.

4 Q But, in general, the large advertisers are responsible
5 for almost all the spend in Google Ads; right?

6 A I know larger advertisers have a large amount of spend
7 in Google Ads. I don't recall the exact statistic sitting
8 here.

9 Q Okay. So if we look at PTX 1232, which was one of the
10 exhibits that you looked at in your white binder.

11 A Yes.

12 Q All right. So the -- so when we're referring to the
13 blue bar that they use only Google Ads, right, the
14 preponderant amount of that money would be coming from large
15 advertisers; right?

16 A If we think large advertisers are more likely to use
17 DSPs like DV360, I think it's the right bar that corresponds
18 to those advertisers.

19 Q Okay. And then if we look at -- move back a page in
20 the binder, and we'll put up PTX 1231. This is another
21 chart you showed the Court.

22 Now here, this is based on number of advertisers;
23 right?

24 A Correct.

25 Q Okay. So here, almost all the advertisers are -- use

1 only Google Ads and don't use -- compared to the number who
2 use only DV360 or use both; right?

3 A Yes.

4 Q And what's driving that difference between these
5 numbers and the dollar numbers we were looking at, is the
6 blue bar here includes advertisers who can spend de minimis
7 amounts, they can spend \$1?

8 A So, on average, the Google Ads' only advertisers here
9 spend less than the ones who use both DV360 and ads.

10 Q Right. And at the risk of doing math with you, if we
11 just look back at 1232.

12 There are -- so we just looked at -- there's
13 4.05 million advertisers who use only Google Ads. That was
14 on the previous chart. And so if you look at that compared
15 to the blue bar over here, you're going to get an average
16 spend of about \$2,000 per advertiser; right? Does that
17 sound about right?

18 A That sounds about right.

19 Q Okay. And that's going to have wide variability.
20 We're going to have large amounts and \$1 amounts?

21 A It can be varied.

22 Q Okay. And there is no minimum spend requirement on
23 Google Ads; right?

24 A That's not my understanding. I mean, that's not my
25 understanding there is one. Sorry.

1 Q Okay. And then the 22,700 advertisers who use both
2 Google Ads and DV360 who may be a proxy for large
3 advertisers, they spend about \$4 billion on Google Ads for
4 an average of about a little over \$175,000 per advertiser;
5 right?

6 A The ones that use both are larger advertisers.

7 Q Okay.

8 A Tend to be larger advertisers on average.

9 Q All right. And then PTX 1389. Okay. This is another
10 exhibit -- you talked about the bar on the left is the share
11 of all -- of all Google Ads bidding tools of indirect
12 open-web display impressions worldwide; right? Or, I'm
13 sorry, of the list of bidding tools and third-party
14 exchanges. Let me start over.

15 So look at that bar. This would include AdX's
16 share of open-web display impressions worldwide; right?

17 A Transacted through all buying tools. Right.
18 Advertiser ad networks and DSPs.

19 Q Right. And also using Google Ads' advertisers?

20 A Yeah. So the dark blue on the left would be the ads
21 through the AdX part of this.

22 Q So at the bottom it says Google Ads, and so these are
23 the Google Ads' advertisers on AdX, and then on AdSense and
24 then on third-party exchanges?

25 A That's the impressions corresponding to those, yeah,

1 combinations.

2 Q And I think we agree that AdSense is not in your
3 markets in this case; right?

4 A AdSense is not a product in one of the relevant product
5 markets, but it is a source of inventory for advertisers
6 transacting on Google Ads.

7 Q Right. And when we looked before on the chart showing,
8 I believe that Google's share of bidding tools was only
9 about 20 percent. Okay.

10 This Google Ads demand would be a subset of that;
11 right? Google Ads demand is only running through part of
12 the bidding tools?

13 A I'm sorry. You were referencing an earlier
14 calculation. I didn't know what you were referencing.

15 Q Then I'll move on.

16 A Okay.

17 Q Let's look at PTX 188.

18 THE COURT: Actually, we're going to stop at this
19 point and have lunch. We'll be back at 2:00.

20 (Court recessed for lunch at 1:01 p.m)

21 -----
22 I certify that the foregoing is a true and accurate
23 transcription of my stenographic notes.

24 

25 Stephanie M. Austin, RPR, CRR